

La Relazione tra intelligenza emotiva dei piloti e l'attitudine al rischio: nuove ipotesi per la selezione e il training

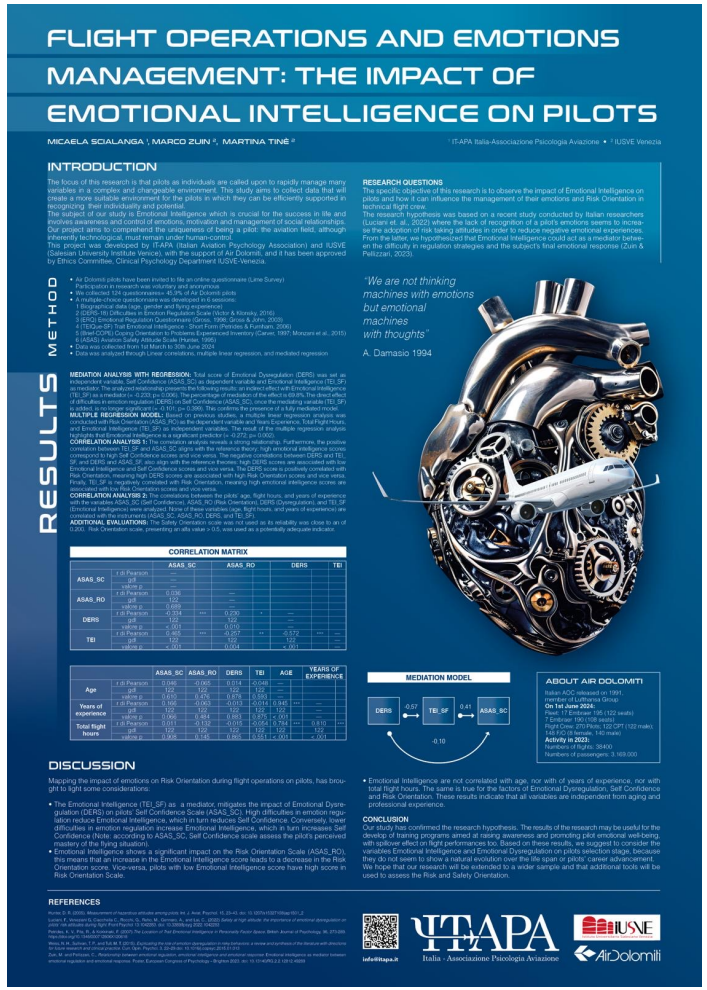
Micaela Scialanga
IT-APA Italia - Associazione Psicologia Aviazione

Martina Tinè
Dipartimento di Psicologia Università IUSVE - Venezia

13 Novembre 2026
Roma

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Italia - Associazione Psicologia Aviazione

Obiettivo della ricerca



FLIGHT OPERATIONS AND EMOTIONS MANAGEMENT: THE IMPACT OF EMOTIONAL INTELLIGENCE ON PILOTS

MICAELA SCIALANGA [1], MARCO ZUIN [2], MARTINA TINÈ [2]

[1] IT-APA Italia-Associazione Psicologia Aviazione • [2] IUSVE Venezia

INTRODUCTION

RESEARCH QUESTIONS

METHOD

RESULTS

"We are not thinking machines with emotions but emotional machines with thoughts"

A. Damasio 1994

CORRELATION MATRIX

MEDIATION MODEL

ABOUT AIR DOLOMITI

DISCUSSION

CONCLUSION

REFERENCES

Risk Minimization

Accident Proneness

Hazardous Thought Pattern
(5 items)

RISK of Accident Involvment

Risky Behaviour
Risk Taking Behaviour

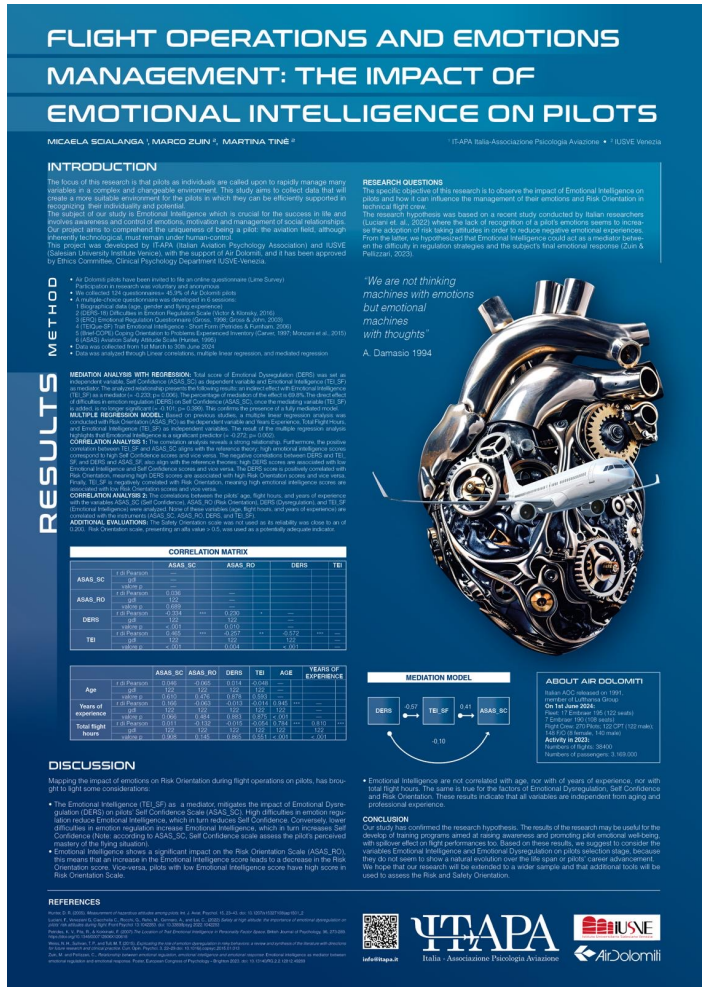
Risk Perception
Risk Tolerance

Risk Attitude
Safety Attitude

Safety Orientation
Risk Orientation

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INTRODUCTION

The focus of this research is that pilots as individuals are called upon to rapidly manage many variables in a complex and changeable environment. This study aims to collect data that will create a more suitable environment for the pilots in which they can be efficiently supported in recognizing their individuality and potential.
The subject of our study is Emotional Intelligence which is crucial for the success in life and involves awareness and control of emotions, motivation and management of social relationships. Our project aims to comprehend the uniqueness of being a pilot: the aviation field, although inherently technological, must remain under human-control.
This project was developed by IT-APA (Italian Aviation Psychology Association) and IUSVE (Salesian University Institute Venice), with the support of Air Dolomiti, and it has been approved by Ethics Committee, Clinical Psychology Department IUSVE-Venezia.

RESEARCH QUESTIONS

The specific objective of this research is to observe the impact of Emotional Intelligence on pilots and how it can influence the management of their emotions and Risk Orientation in technical flight crew.
The research hypothesis was based on a recent study conducted by Italian researchers (Luciani et. al., 2022) where the lack of recognition of a pilot's emotions seems to increase the adoption of risk taking attitudes in order to reduce negative emotional experiences. From the latter, we hypothesized that Emotional Intelligence could act as a mediator between the difficulty in regulation strategies and the subject's final emotional response (Zuin & Pellizzari, 2023).

METHOD

- Air Dolomiti pilots have been invited to file an online questionnaire (Lime Survey)
  Participation in research was voluntary and anonymous
- Recruitment of participants was carried out via pilots
- A multiple-choice questionnaire was structured in 6 sessions:
  1 Biographical data (age, gender and flying experience)
  2 (DERS-18) Difficulties in Emotion Regulation Scale (Victor & Klonsky, 2016)
  3 (ERQ) Emotional Regulation Questionnaire (Gross, 1999; Gross & John, 2003)
  4 (TEQue-SF) Trait Emotional Intelligence - Short Form (Petrides & Furnham, 2006)
  5 (Brief-COPE) Coping Orientation to Problems Experienced Inventory (Carver, 1997; Monzani et al., 2015)
  6 (ASAS) Aviation Safety Attitude Scale (Hunter, 1995)
- Data was collected from 1st March to 30th June 2024
- Data was analyzed through Linear correlations, multiple linear regression, and mediated regression

RESULTS

"We are not thinking machines with emotions but emotional machines with thoughts"
A. Damasio 1994

MEDIATION ANALYSIS WITH REGRESSION: Total score of Emotional Dysregulation (DERS) was set as independent variable, Self Confidence (ASAS_SC) as dependent variable and Emotional Intelligence (TEI_SF) as mediator. The analyzed relationship presents the following results: an indirect effect with Emotional Intelligence (TEI_SF) as a mediator (= -0.233, p= 0.006). The percentage of mediation of the effect is 69.9%. The direct effect of difficulties in emotion regulation (DERS) on Self Confidence (ASAS_SC), once the mediating variable (TEI_SF) is added, is no longer significant (= -0.101; p= 0.369). This confirms the presence of a fully mediated model.
MULTIPLE REGRESSION MODEL: Based on previous studies, a multiple linear regression analysis was conducted with Risk Orientation (ASAS_RO) as the dependent variable and Years Experience, Total Flight Hours, and Emotional Intelligence (TEI_SF) as independent variables. The result of the multiple regression analysis highlights that Emotional Intelligence is a significant predictor (= -0.272; p= 0.002).
CORRELATION ANALYSIS 1: The correlation analysis reveals a strong relationship. Furthermore, the positive correlation between TEI_SF and ASAS_SC aligns with the reference theory: high emotional intelligence scores correspond to high Self Confidence scores and vice versa. The negative correlations between DERS and TEI_SF and DERS and ASAS_SF also align with the reference theories: high DERS scores are associated with low Emotional Intelligence and Self Confidence scores and vice versa. The DERS score is positively correlated with Risk Orientation, meaning high DERS scores are associated with high Risk Orientation scores and vice versa. Finally, TEI_SF is negatively correlated with Risk Orientation, meaning high emotional intelligence scores are correlated with low Risk Orientation scores.
CORRELATION ANALYSIS 2: The correlations between the pilots' age, flight hours, and years of experience with the variables ASAS_SC (Self Confidence), ASAS_RO (Risk Orientation), DERS (Dysregulation), and TEI_SF (Emotional Intelligence), were analyzed. None of these variables (age, flight hours, and years of experience) are correlated with the instruments (ASAS_SC, ASAS_RO, DERS, and TEI_SF).
ADDITIONAL EVALUATIONS: The Safety Orientation scale was not used as its reliability was close to an of 0.200. Risk Orientation scale, presenting an alfa value > 0.5, was used as a potentially adequate indicator.

CORRELATION MATRIX

		ASAS_SC	ASAS_RO	DERS	TEI
ASAS_SC	r di Pearson	—			
	gdl	122	—		
	valore p				
ASAS_RO	r di Pearson	0.156	—		
	gdl	122	122	—	
	valore p	0.089			
DERS	r di Pearson	-0.334	***	0.230	*	—
	gdl	122		122		—
	valore p	< .001		0.015		
TEI	r di Pearson	0.465	***	-0.257	**	-0.372	***	—
	gdl	122		122		122		—
	valore p	< .001		0.004		< .001		

		ASAS_SC	ASAS_RO	DERS	TEI	AGE	YEARS OF EXPERIENCE
Age	r di Pearson	0.046	-0.065	0.014	-0.048	—	
	gdl	122	122	122	122	—	—
	valore p	0.610	0.475	0.878	0.599	—	—
Years of experience	r di Pearson	0.140	-0.063	-0.013	-0.014	0.945	***	—
	gdl	122	122	122	122	122	—
	valore p	0.066	0.484	0.883	0.875	< .001	—
Total flight hours	r di Pearson	0.011	-0.132	-0.015	-0.054	0.764	***	0.810	***
	gdl	122	122	122	122	122	122	—
	valore p	0.906	0.148	0.865	0.551	< .001	< .001	—

MEDIATION MODEL

ABOUT AIR DOLOMITI

Italian AOC released on 1991.
Owned by Alpitour Group
On Total Jets: 25
Fleet: 2 Embraer 195 (122 seats)
7 Embraer 190 (108 seats)
Flight Crew: 270 Pilots; 122 CPT (122 male); 148 FO (8 female, 140 male)
Activity in 2023:
Numbers of flights: 39400
Numbers of passengers: 3.169.000

DISCUSSION

Mapping the impact of emotions on Risk Orientation during flight operations on pilots, has brought to light some considerations:

- The Emotional Intelligence (TEI_SF) as a mediator, mitigates the impact of Emotional Dysregulation (DERS) on pilots' Self Confidence Scale (ASAS_SC). High difficulties in emotion regulation reduce Emotional Intelligence, which in turn reduces Self Confidence. Conversely, lower difficulties in emotion regulation increase Emotional Intelligence, which in turn increases Self Confidence (Note: according to ASAS_SC, Self Confidence scale assess the pilot's perceived mastery of the flying situation).
- Emotional Intelligence shows a significant impact on the Risk Orientation Scale (ASAS_RO), this means that an increase in the Emotional Intelligence score leads to a decrease in the Risk Orientation score. Vice-versa, pilots with low Emotional Intelligence score have high score in Risk Orientation Scale.
- Emotional Intelligence are not correlated with age, nor with of years of experience, nor with total flight hours. The same is true for the factors of Emotional Dysregulation, Self Confidence and Risk Orientation. These results indicate that all variables are independent from aging and professional experience.

CONCLUSION

Our study has confirmed the research hypothesis. The results of the research may be useful for the develop of training programs aimed at raising awareness and promoting pilot emotional well-being, with spillover effect on flight performances too. Based on these results, we suggest to consider the variables Emotional Intelligence and Emotional Dysregulation on pilots selection stage, because they do not seem to show a natural evolution over the life span or pilots' career advancement.
We hope that our research will be extended to a wider sample and that additional tools will be used to assess the Risk and Safety Orientation.

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Zuin, M. and Pellizzari, C., Relationship between emotional regulation, emotional intelligence and emotional response: Emotional intelligence as mediator between emotional regulation and emotional response. Poster, European Congress of Psychology – Brighton (EZZ). doi: 10.13140/RG.2.2.18112.49289

info@itapa.it

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IUSVE

AirDolomiti

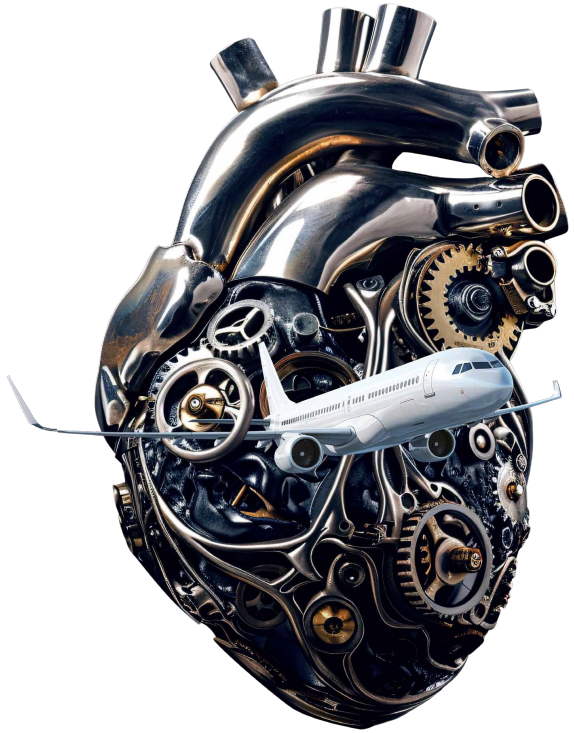
Valutare l'impatto dell'Intelligenza Emotiva sui piloti

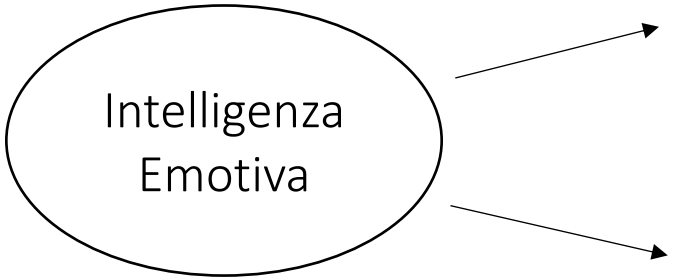
Approfondire aspetto Regolazione Emozioni

Individuare relazione con Attitudine alla Sicurezza

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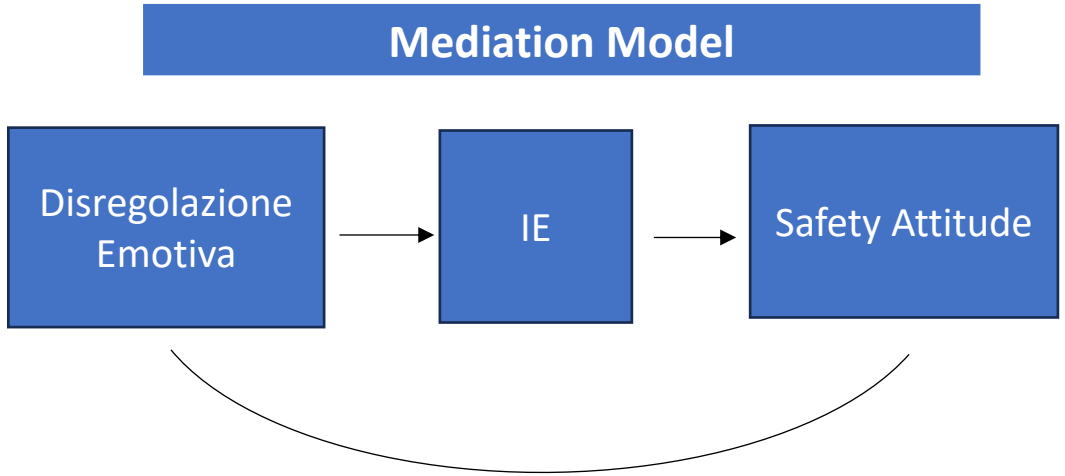
Ipotesi della ricerca





Regolazione delle emozioni

Attitudine alla sicurezza nelle operazioni di volo



Strumenti e Metodi



CAMPIONE

124 piloti (pari al 45,9% del totale in forza) di Air Dolomiti

- ✓ Compilazione volontaria online
- ✓ Link aperto per 6 mesi

Batteria di 5 test su scala Likert suddivisa in 6 sezioni:

1. **Dati anamnestici**
2. **DERS-18** Scala delle difficoltà nella regolazione emotiva (Victor & Klonsky, 2016)
3. **ERQ** Questionario sulla regolazione emotiva (Gross, 1998; Gross & John, 2003)
4. **TEIQue-SF** Intelligenza emotiva (Petrides & Furnham, 2006)
5. **Brief-COPE** Inventario dell'orientamento alla gestione dei problemi vissuti (Carver, 1997; Monzani et al., 2015)
6. **ASAS** Scala degli atteggiamenti verso la sicurezza aerea (Hunter, 1995)

Strumenti e Metodi



ASAS - *Aviation Safety Attitude Scale* (Hunter 1995 - 2005)

- 27 item su scala Likert a 5 punti da "Strongly Disagree" a "Strongly Agree"
- 3 macrodimensioni (sottoscale):

SELF CONFIDENCE – SC padronanza e fiducia percepita dal pilota rispetto a date situazioni di volo/fiducia nella propria abilità come pilota

RISK ORIENTATION – RO tendenza del pilota a mettersi in situazioni rischiose o a prendere decisioni affrettate durante il volo

SAFETY ORIENTATION – SO conoscenza del pilota di situazioni e nozioni volte a salvaguardare la safety; propensione del pilota a compiere scelte prudenti e a pianificare in modo conservativo

Risultati

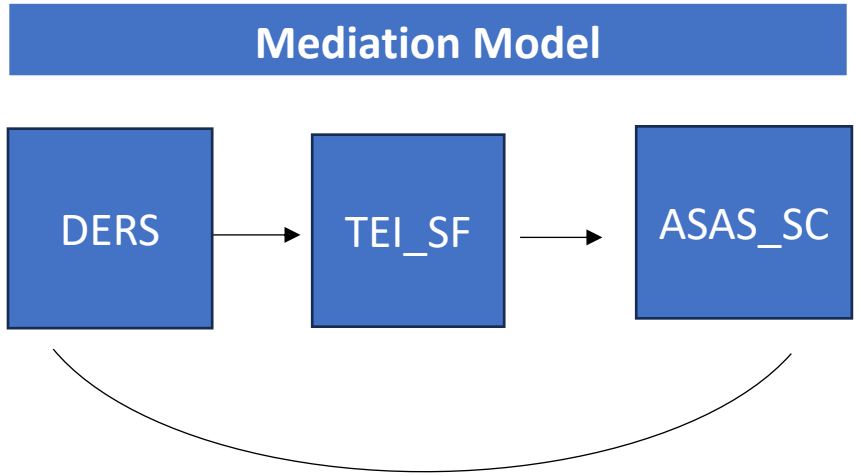
- *Alta IE - Bassa Disregolazione emotiva*
(Correlazioni negative tra DERS con TEI_SF)

- *Alta IE – Alti valori di Self Confidence*
(Correlazione positiva tra TEI_SF e ASAS_SC)

- *Alta IE – Bassi valori di Risk Orientation*
(Correlazione negativa tra TEI_SF e ASAS_RO)

- *Alta Disregolazione Emotiva – Alti valori di Risk Orientation*
(Correlazione positiva tra DERS e ASAS_RO)

I risultati ottenuti hanno confermato l'ipotesi iniziale della ricerca



- Nessuna correlazione tra risultati ai test ed età o esperienza professionale (ASAS_SC - ASAS_RO – DERS - TEI_SF)

Risultati

Inoltre

Strategie Coping

✓ TEI e Suppression:

chi è più emotivamente intelligente usa meno la soppressione emotiva

✓ TEI e Avoidant Coping:

l'intelligenza emotiva si associa a minore ricorso al coping evitante

✓ Avoidant Coping e ASAS_RO:

il coping evitante è positivamente correlato all'orientamento al rischio

Limiti della ricerca



Campione

Rappresentatività:

- Nazionalità italiana (96,8%)
- Ore di volo
- Assenza di informazioni sul ruolo (comandante/primo ufficiale)

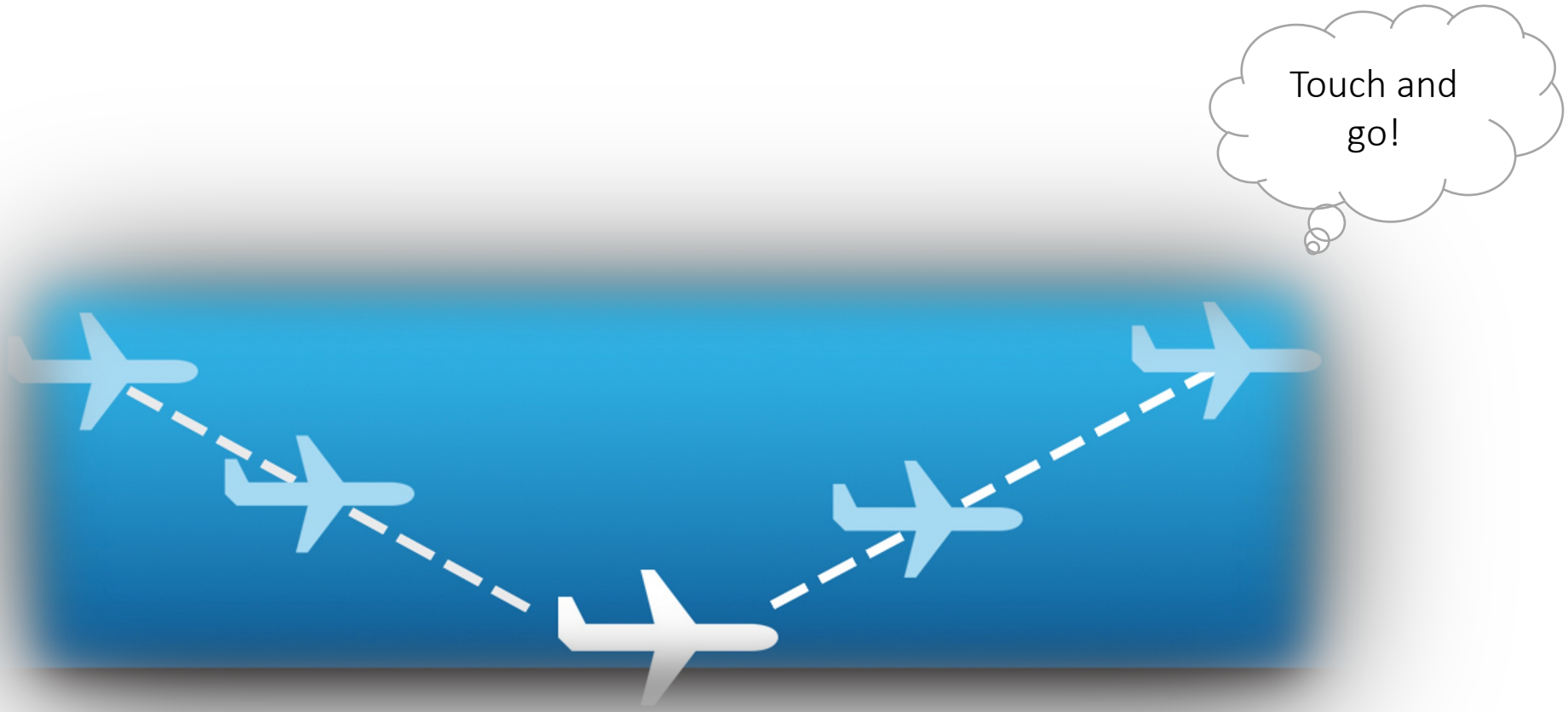
Dimensione:

- Campione ridotto per svolgere valutazioni statistiche dell'effetto mediazione

Strumenti

- ASAS (Hunter 1995)
  scala SO scarsa validità interna
- Lingua Inglese

Conclusioni



Conclusioni

Mappare le caratteristiche delle emozioni nell'attitudine al rischio nel volo sui piloti

Sensibilizzare e promuovere il benessere emotivo al fine di migliorare le prestazioni in volo

Prevenire il disagio emotivo nell'ottica di percepire, riconoscere e gestire le proprie emozioni

Progettare attività di training al fine di sviluppare e maturare competenze emotive nuove ed evolute sulla persona del pilota

Ricadute Applicative e prospettive future

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What's next

Selezione

Selezione pre-assunzione
Psychological Assessment
(reg. 1042/2018)
Includere la valutazione della intelligenza emotiva

Training

Includere nella formazione moduli di sensibilizzazione e consapevolezza sulla regolazione delle emozioni ed intelligenza emotiva

Nuova ricerca IT-APA 2027

- Partner accademici
- Campione maggiormente rappresentativo
- Strumenti

✓ Ampliare uso strumenti ulteriori per valutare Safety Attitude e Risk Attitude
✓ Validazione italiano
✓ Costruzione nuovo strumento per valutazione

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Grazie per l’attenzione

Micaela Scialanga micaela.scialanga@itapa.it

Martina Tinè martina.tine@itapa.it

info@itapa.it www.itapa.it