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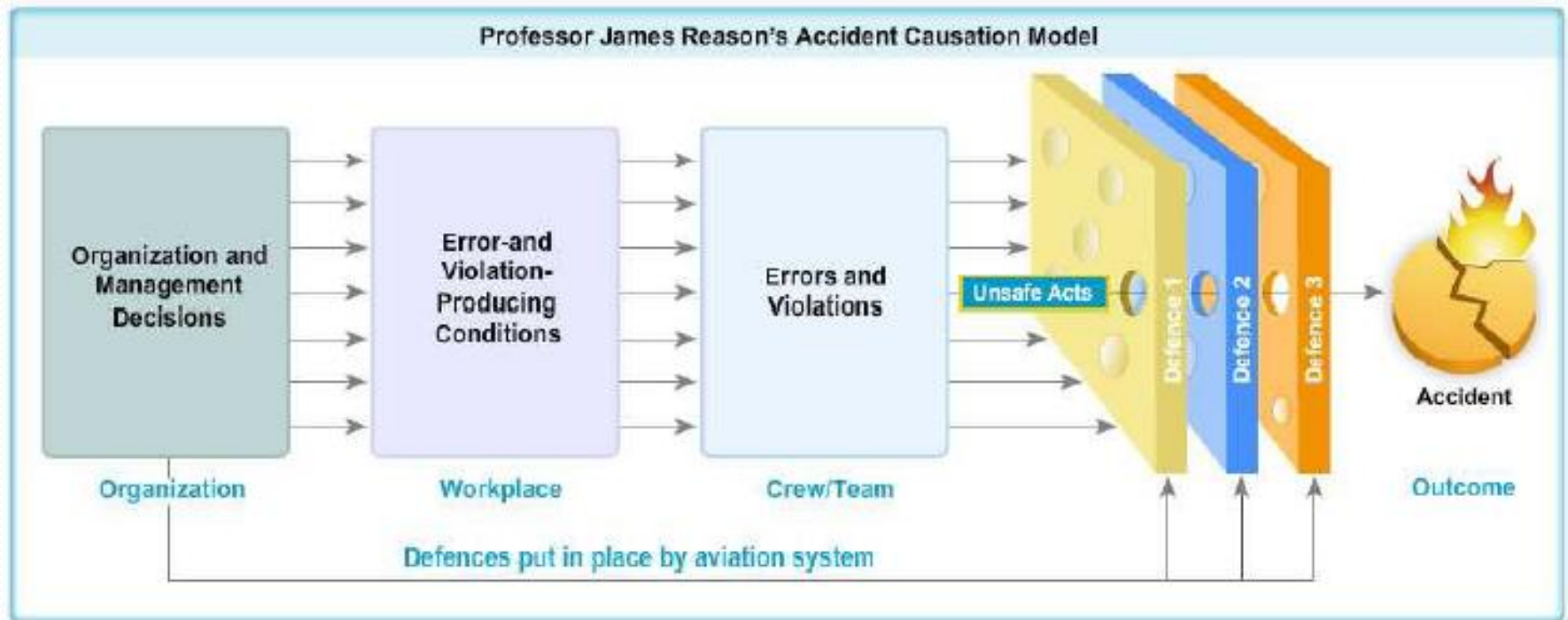
**Human factors in general aviation flight instruction
authenticity: A measure of student's perceived
satisfaction.**

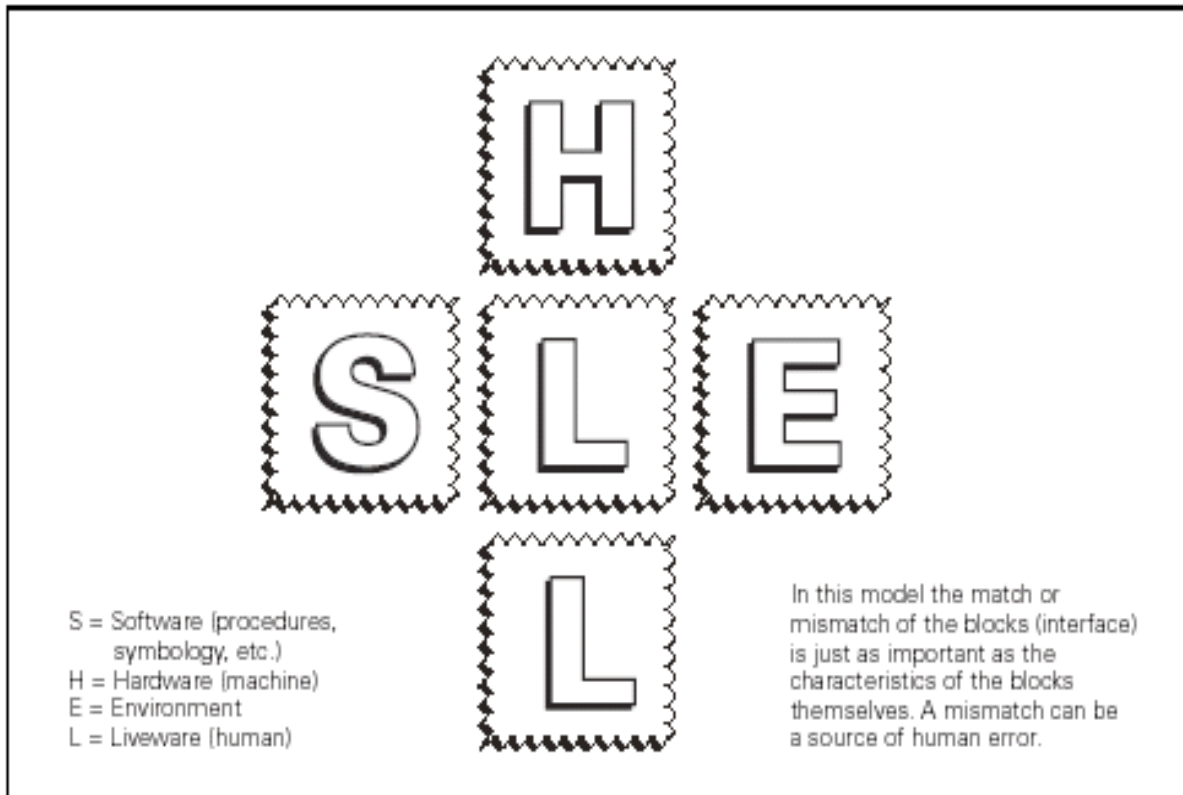
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Why use organizational leadership theory to study aviation safety?

- ICAO adopted James Reason's Model for Safety Management Systems (SMS)





SHELL model. Retrieved on March 1st, 2010 from <http://www.atlasaviation.com/AviationLibrary/FundamentalHumanFactorsConcepts/Fundam10.gif>

SHELL Model

- Liveware – Liveware Interaction
 - Organizational team work
 - Personal interaction

Authentic Leadership Foundation

- Authentic leadership has its roots in Bass (1985, 1990) and Bass & Steidlmeier (1999).
- Bass focused on the moral and ethical components of transformational and charismatic leaders.
- Walumbwa, Avolio, Gardner, Wernsing and Peterson (2008) proposed that there is more to authentic leadership than “being true to oneself” (p. 90) as maintained by Taylor (1991).

Authenticity Defined

- Harter (2002) : *“Owning one’s own personal experiences, be they thoughts, emotions, needs, preferences, or beliefs, processes captured by the injunction to know oneself”* (p. 382).
- Luthans and Avolio (2003) : **“A process that draws from both positive psychological capacities and a highly developed organizational context, which results in both greater self-awareness and self-regulated positive behaviors on the part of leaders and associates, fostering positive self-development”** (p. 243).

Basic Tenants of Authentic Leadership

- Considers ones strength's, not weaknesses
- attributes of optimism, hope, resilience, morality and transparency (Fry & Whittington, 2005).
- Consider interests of others
- Two-way communication is desired and full participation warranted.

Paradigm Shift

- Move from **FLY – CRASH – FIX – FLY** approach to safety to a more predictive model of identifying Hazards, Determining Risks, Limiting Incidents and Avoiding Identifiable Accidents.
- Organizational Leadership tools can be an additional front line defense against latent errors in the system.

Leadership's role in Aviation

- Need to collect data (measure latent failures) indiscriminately from all sources
- Support safety research both with time and resources (investment)
- Avoid rushing to judgment
- Avoid alienating your data sources (subordinates)
- Adequately/fairly utilize data provided in the decision making process
- Walk the walk. Implement the plan.
- Weigh your own perception of authenticity against that of your subordinates (self-check)

Yukl, 2009

- Key relations-oriented behaviors that leaders possess:
 - 1) supporting
 - 2) developing
 - 3) recognizing.
- Recognizing behavior involves positive feedback effective performance. He states that this type of recognition helps to, “*strengthen desirable behavior, improve interpersonal relationships, and increase job satisfaction*” (p. 69).

FAA AC-120-92

- **Section 7.1** identifies the need for leadership to establish an effective employee feedback system that provides confidentiality as is necessary in order to maintain a positive safety culture and overall training satisfaction.

SMS – ISO 2007

- ISO Key principle #2 (of 8) indicates that **leaders** should establish, “unity of purpose and direction of the organization. They should create and maintain the internal environment in which **people can become fully involved** in achieving the organization's objectives” (p.1).

Authentic Leadership Questionnaire (ALQ)

Sub-Scales

- Transparency
- Self-Awareness
- Moral/Ethics
- Balanced Processing – *feedback and participant input in decision making*

Transparency

- The results indicate that openness of the training process is related to one's level of contentment with the flight training experience. Examples of transparency in flight training include the student's level of participation in the training process and open, honest evaluation of performance. Additionally, instructors that share any potential risks or hazards of maneuvers up front, would be considered transparent.

Awareness

- Awareness of one's own capabilities in flight instruction is beneficial to both student and instructor alike. When an instructor makes an error, it is best to not attempt to cover it up as students are quick to notice. A perceived lack of awareness in one's own abilities or of the environment as a whole can lead to lack of student confidence and ultimately satisfaction with instruction given.

Moral/Ethics

- Instructor's values affect their everyday experiences and how others perceive them. In flight training, strict adherence to regulatory standards by instructors sets the bar for students to follow. Additionally, students who observe their instructor not complying with the standards set by the FAA, are sent a message of unprofessionalism and this behavior can lead to dissatisfaction. Many instructors are building time to become Air Transport Pilots. Under Title 14 of the Code of Federal Regulations section 61.153(c), the FAA must determine the moral character of its applicants (FAA, 2010).

Balanced Processing

- Students are more satisfied with instructors that communicate with them regularly and include them in the decision making process throughout the training regime. Balanced processing is a key element in crew resource management in the flight instruction field and aviation in general.

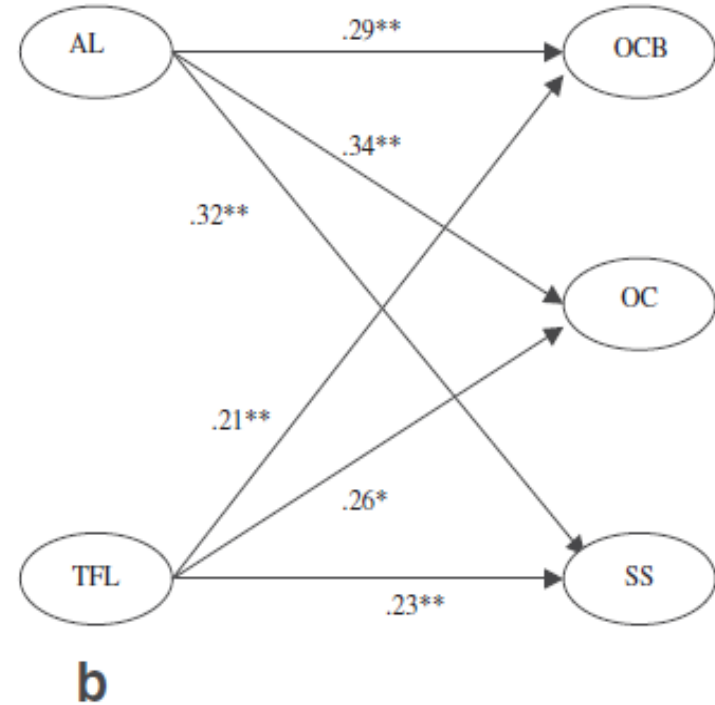
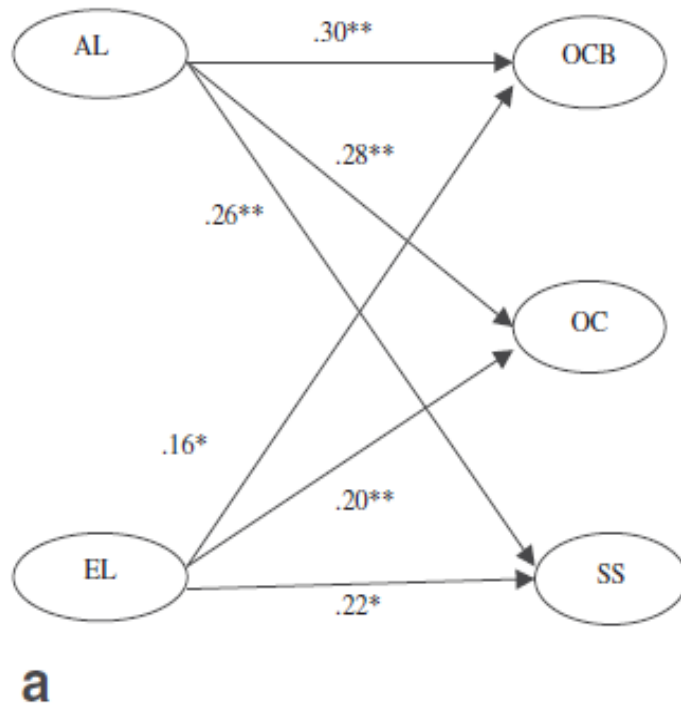
Authentic Leadership Questionnaire (ALQ)

- Walumbwa, Avolio, Gardner, Wernsing and Peterson (2008)
ALQ.

Walumbwa et al. (2008) conducted three studies with the purpose of testing a theory based measure for authentic leadership.

The third study in the research indicated a positive relationship between authentic leadership and supervisor related performance. One of the performance measures was satisfaction.

Study 2: Relationships Among Authentic, Ethical and Transformational Leadership, and Outcome Variables



Note: AL = authentic leadership; EL = ethical leadership; TFL = transformational leadership; OCB = organizational citizenship behavior; OC = organization commitment; SS = satisfaction with supervisor. Results are standardized coefficients.

* $p < .05$ (two-tailed).

** $p < .01$ (two-tailed).

Walumbwa, Avolio, Gardner, Wernsing and Peterson (2008) ALQ.

Safety and Satisfaction?

- Robert Wolosin (2008) linked customer safety with satisfaction in the medical field.
 - Key elements include open communication and shared values which are variables present in the authentic leadership model.
- A study conducted by Weingart, Price, Duncombe, Connor, Sommer Conley, Bierer, and Ponte (2007), found poor communication (balanced processing in authentic leadership model) and lack of respect (ethics/morality) as a key contributor to incident reporting and overall dissatisfaction with service.
 - Since the authentic leadership model and the SMS model adopted by the FAA/Aviation Industry ***rely on latent condition reporting, satisfaction can be an early predictor of system safety condition.***

Bliss & Fallon (2003)

- Studies specifically targeting leadership and follower satisfaction in the cockpit indicated that participative leadership strategies increased follower satisfaction.

Pilot study

As an initial investigation into the relationship between authentic leadership and aviation safety, an exploration was initiated to determine whether or not authentic leadership also affects student performance in the form of perceived satisfaction in a flight training environment.

This was due to the ease of obtaining participants. The relationship between ATC controllers is also an area of interest for future research.

Hypothesis

Hypothesis: Authentic leadership is positively associated with individual student pilot satisfaction.

Purpose

The purpose of this research was to measure correlation between the results of an ALQ assessment and the perceived satisfaction (performance) of an aviation organization (flight training) where an SMS safety system might one day be implemented.

Population

- Non-probability sample of convenience
- Flight students currently engaged in flight training operations were surveyed following the procedure used by Walumbwa et al. (2008).
- The target sample size was fifty respondents. All male.
- Fifty (50) respondents agreed to participate in the survey instrument out of 70 distributed (71% response rate).

Instruments

The Authentic Leadership Questionnaire (ALQ) was used to measure instructor authenticity (16 item scale)

The Satisfaction With Life Survey (SWLS) satisfaction survey was utilized to determine the student's level of satisfaction with their flight instruction experience (5 item scale).

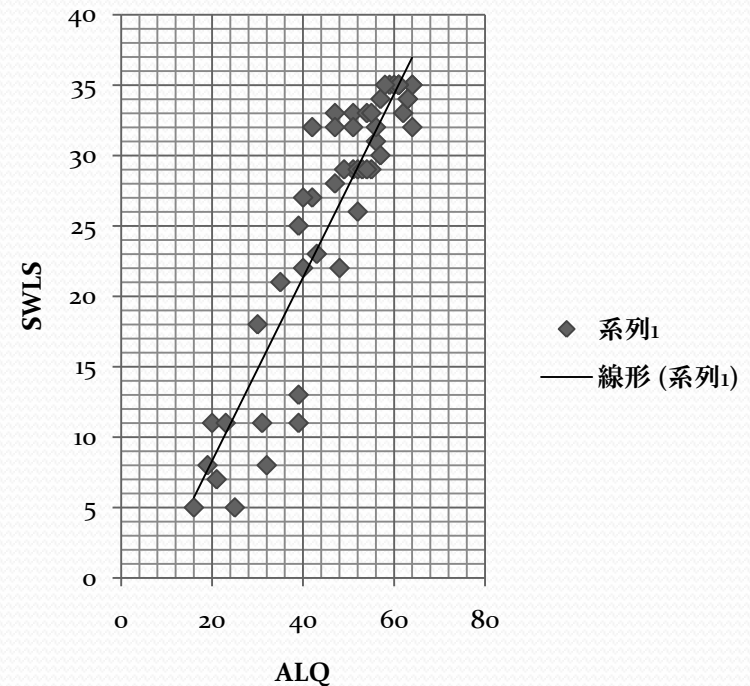
Results

Variable	M	SD	Crohnbach's α	r
ALQ	47.38	13.57	.957	
SWLS	26.12	9.62	.928	.9182**

The correlation between the two variables was significant (** $p < 0.01$).

Results

The data, when scatter-plotted indicated a strong positive correlation between student flight training satisfaction and perceived level of instructor authenticity



Discussion

In general, mean satisfaction and perceived flight instructor authenticity scores are high. Standard deviation results show the data points are close to the mean scores.

The hypothesis *Authentic leadership is positively associated with individual student pilot performance (Satisfaction with instructor)* has been proven (.912) with significant findings. [Null was rejected]

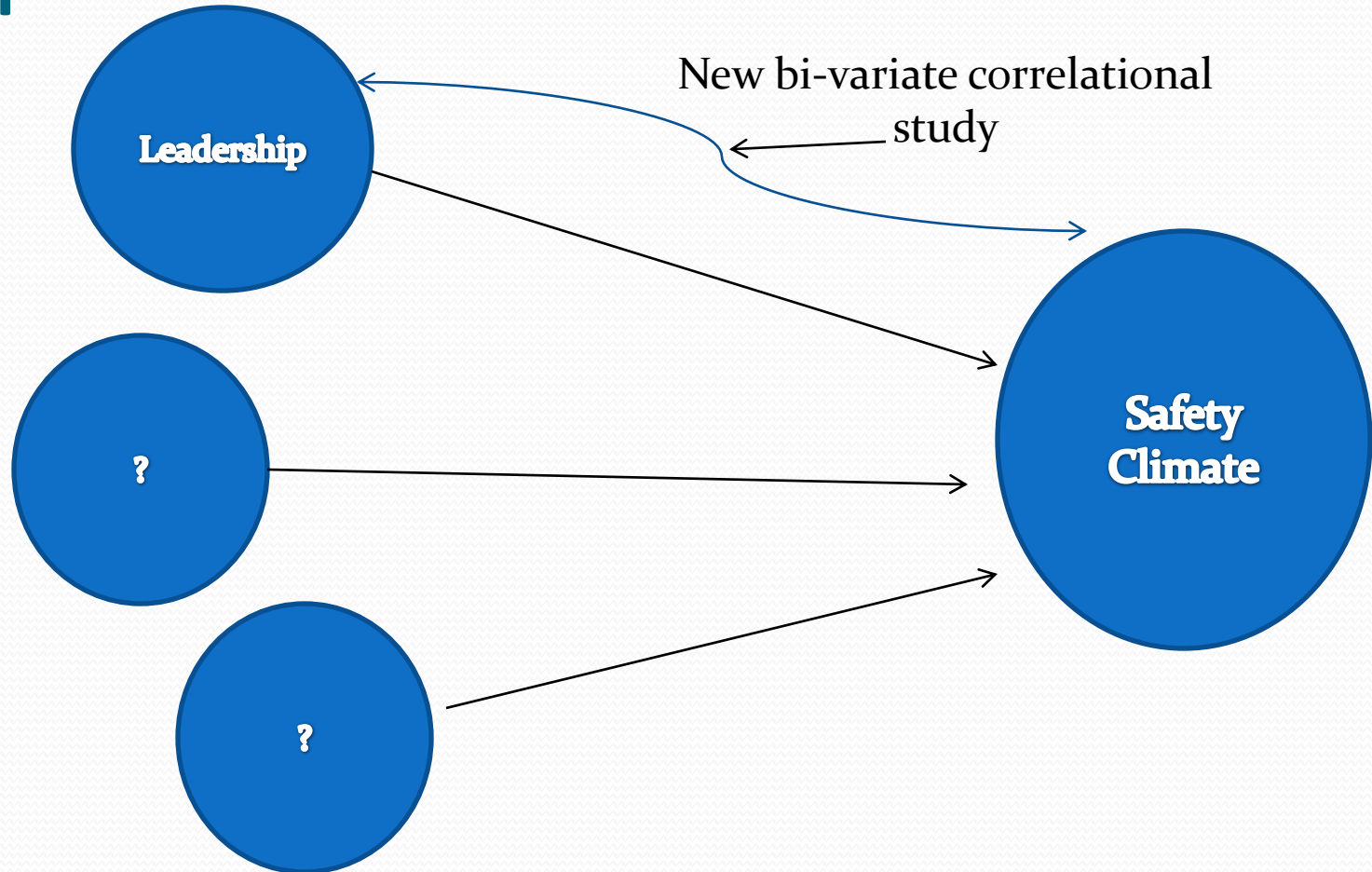
With a relatively small sample size, strong positive correlations are still indicated between the two variables (leader authenticity and student satisfaction).

Additionally, mean scores of the SWLS were consistent with larger, national data sets (25.95 for our study compared to 25.8 in the Diener et al. study).

Limitations

- Since this experiment is only exploring correlation between two variables, there is **no causality**. The data indicates that there is simply a **positive relationship** between *perceived authenticity* and *satisfaction*.
- All male population.
- The data collected was a cross-sectional view of flight training attitudes in a limited region and not longitudinal in nature. A larger population studied over a longer period of time would increase the assumption's overall validity. This study simply demonstrated that satisfaction is related to authenticity.
- Perceived instructor authenticity and student satisfaction with instruction are likely linked because students feel more comfortable (safe) and therefore, satisfied with instructors who they perceive behave authentically (moral/ethical ways, share ideas and suggestions, are transparent and demonstrate a higher moral/ethical behavior).
- Need for a stronger direct association...i.e. Leadership and Safety...

Proposed Model



Recommendations

- Future research to study the effect of additional variables associated with the SMS model combined with leadership authenticity is warranted.
- Other research in non-punitive response to error (Leape, 1994) has indicated that positive safety culture increases safety by removing fear of blame and punishment.

Recommendations continued

- Satisfaction, positive safety culture, and resilience are good candidates for a regression analysis study on how each affect safety measure(s) or latent conditions in an aviation organization.
- Need for more research to better operationalize the SMS model's leadership component
- Predictive model needs development

Thank you very much.

Questions?