

Human Factors: The Journal of the Human Factors and Ergonomics Society

<http://hfs.sagepub.com/>

Putting the "We" Into Teamwork : Effects of Priming Personal or Social Identity on Flight Attendants' Perceptions of Teamwork and Communication

Jane Ford, David O'Hare and Robert Henderson

Human Factors: The Journal of the Human Factors and Ergonomics Society 2013 55: 499 originally published online 15 November 2012

DOI: 10.1177/0018720812465311

The online version of this article can be found at:

<http://hfs.sagepub.com/content/55/3/499>

Published by:



<http://www.sagepublications.com>

On behalf of:



Human Factors and Ergonomics Society

Additional services and information for *Human Factors: The Journal of the Human Factors and Ergonomics Society* can be found at:

Email Alerts: <http://hfs.sagepub.com/cgi/alerts>

Subscriptions: <http://hfs.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

>> **Version of Record** - May 14, 2013

Online First Version of Record - Nov 15, 2012

What is This?

Putting the "We" Into Teamwork: Effects of Priming Personal or Social Identity on Flight Attendants' Perceptions of Teamwork and Communication

Jane Ford, David O'Hare, University of Otago, Dunedin, New Zealand, and Robert Henderson, Consultant, Auckland, New Zealand

Objective: The study was designed to investigate the effectiveness of a manipulation derived from social categorization and social identity theory to promote greater cabin crew willingness to engage in intergroup communication and teamwork in airline operations.

Background: Failures of communication and teamwork between airline crew have been implicated in a number of airline crashes.

Method: Flight attendants based domestically ($n = 254$) or overseas ($n = 230$) received a manipulation designed to prime either their social identity or personal identity and then read a brief outline of an in-flight event before completing a teamwork questionnaire.

Results: Flight attendants who received a social identity prime indicated increased willingness to engage in coordinated team action compared with those who received a personal identity prime.

Conclusion: Priming social identity can enhance attitudes toward teamwork and communication, potentially leading to increased willingness to engage in intergroup cooperation.

Application: Social categorization and social identity theories can be used to inform joint training program development for flight attendants and pilots to create increased willingness for group members to participate in effective communication and teamwork behaviors.

Keywords: cooperation, intergroup behavior

INTRODUCTION

The crash of a United Airlines DC-8 on approach to Portland, Oregon, in 1978 was partly the result of the flightdeck crew failing to communicate effectively about the amount of fuel remaining on board (Cooke & Durso, 2008; O'Hare & Roscoe, 1990). The realization that interpersonal processes could play such a pivotal role in aviation safety gathered momentum following this accident, leading ultimately to the development of aircrew training programs known initially as Cockpit Resource Management and later as Crew Resource Management (CRM). Reviews of CRM program effectiveness (e.g., O'Connor, Flin, & Fletcher, 2002; Salas, Burke, Bowers, & Wilson, 2001) have shown clear effects of CRM training on aircrew attitudes and behaviors.

CRM training has been an integral part of airline pilot training for several decades and has now spread to other domains such as medicine, offshore oil production, and nuclear power (Salas, Wilson, Burke, & Wightman 2006). Following other airline crashes (e.g., in 1989 the British Midlands B737 at Kegworth in England and the Air Ontario F28 at Dryden, Ontario) where failures of communication extended to the cabin crew, there were suggestions that traditional CRM programs needed to be extended to include interactions between the cabin crew and the flightdeck crew (Chidester, 1993; Helmreich, Wiener, & Kanki, 1993; Kayten, 1993). Little research has been reported on the effectiveness of joint CRM training or on ways to improve teamwork and communication either within the cabin crew or between the cabin and flightdeck crews.

Address correspondence to David O'Hare, Department of Psychology, University of Otago, PO Box 56, Dunedin, New Zealand; e-mail: ohare@psy.otago.ac.nz.

HUMAN FACTORS

Vol. 55, No. 3, June 2013, pp. 499-508

DOI:10.1177/0018720812465311

Copyright © 2012, Human Factors and Ergonomics Society.

A complex organization such as an airline consists of many subgroups (e.g., pilots, flight attendants, dispatchers, maintenance, etc.) with their own distinct identities. While pilots and flight attendants are collectively referred to as the “crew,” it may be more accurate to recognize that there are essentially two distinct subcultures onboard a commercial aircraft as the crew members are neither separate individuals nor a single homogenous group. Flightdeck crew differ from cabin crew in numerous respects, including educational background, professional status, technical knowledge, rates of pay and conditions, and gender composition. Security changes such as the locked flightdeck door, introduced since the September 11, 2001, terrorist attacks in the United States, have led to a significant reduction in direct interactions between flightdeck and cabin crew, which have exacerbated existing concerns about communication and coordination between crew members on either side of the cockpit door (Ford, Henderson, & O’Hare, in press).

Published research has paid much attention as to how hierarchical structures operating within the flightdeck crew can hinder effective communication and teamwork (Hackman, 1993; Helmreich & Foushee, 1993; Helmreich & Merritt, 1998), but little research has acknowledged the hierarchical structures that also operate within the flight attendant subgroup. The present study was therefore designed to focus on the latter group. Social identity and social categorization theories will be used to examine whether the priming of a superordinate (organizational) sense of social identity can enhance attitudes toward cooperation and communication, potentially resulting in a greater willingness to participate in teamwork both within the group and with other subgroups such as the flightdeck crew.

SOCIAL CATEGORIZATION AND SOCIAL IDENTITY

Social identity theory was developed (Tajfel, 1970, 1974) to explain people’s tendency to discriminate in favor of in-group members even in conditions where group membership was randomly determined. The simple act of self-categorization as a group member was found to

be sufficient to alter behavior toward others. Social identity can be defined as “an individual’s knowledge that he or she belongs to certain social groups together with some emotional value or significance to him or her of this group membership” (Tajfel, as cited in Haslam, 2004, p. 281). This is distinct from an individual’s personal identity, which concerns his or her individual personal qualities (tastes and preferences) and abilities (physical and intellectual).

In airline operations, social categorization for cabin crew is highly salient in terms of the individual’s roles and responsibilities as well as the uniform they wear. The uniforms emphasize differences between the pilot and flight attendant subgroups. In addition, the lead flight attendants’ uniform might have subtle but distinguishable differences that will readily identify their leadership role both to other members of the flight attendant team (especially relevant on large jet aircraft with a correspondingly large cabin crew complement) and to the passengers. This categorization is further reinforced by organizational practices involving differential travel and accommodation arrangements. These organizational practices are often influenced by union agreements, with the pilot’s union generally being seen as having the greater negotiating power.

In recent years, social identity theory has been applied to the behavior of people in various work situations (Haslam, 2004; Haslam, van Knippenberg, Platow, & Ellemers, 2003). In commercial aviation, aircraft operations occur within a highly specialized environment where effective group interaction can be the difference between a safe flight, an incident, or a crash. Group interaction, both within and between the pilot and flight attendant subgroups, takes place in an extremely confined environment at 30,000+ feet on jet aircraft. Social identity and social categorization theories have not been previously tested in such a relatively extreme organizational environment.

On an aircraft, the rostered crew are a given finite resource unless there are additional aircrew traveling as passengers. This was vividly demonstrated in the Sioux City crash (National Transportation Safety Board [NTSB], 1990) when a United DC 10 crashed while attempting

to make an emergency landing after catastrophic failure of the No. 2 tail engine. In this case a passengering check captain had immediately volunteered assistance to the aircraft's captain. The NSTB report noted that the subsequent coordinated teamwork was a key factor in the flight remaining airborne and being able to attempt a landing.

The literature on social categorization and social identity provides a way of understanding how two very different subgroups separated by power and status could become more willing to engage in positive intergroup behaviors. Previous research has indicated that heightening or emphasizing organizational identification can lead to "improved task performance and organizational citizenship behaviors" (Ellemers, Haslam, Platow, & van Knippenberg, 2003, p. 17). Haslam (2004) points out that it is the "ability to think in terms of 'we' and 'us', not just 'I' and 'me' that . . . underpins people's ability to achieve social cohesion, communicate effectively, influence and persuade each other, act collectively and go beyond the call of duty" (p. 17).

Van Knippenberg and Ellemers (2003) have also outlined the links between social identity and group performance. They believed that "the social identity approach proposes that identification with a group only affects behavior to the extent that the group membership is salient" (p. 36). Thus, although a person might identify with a particular group, it would not necessarily mean that group membership is always salient. Group membership would be more likely to be salient when an individual identifies strongly with the group. They recommended that attempts to enhance group efforts should focus on methods that would make the social identity of a group more salient. One way to do this would be to focus on shared group goals, which would emphasize a common collective identity.

Wegge and Haslam (2003) stated that group goals make social identities more relevant by providing the group with a common purpose. "When group goals are set they help to direct and give meaning to a shared social identity which is used as a framework for coordination and organizing behavior of (potentially) disparate individuals" (p. 51). A shared understanding of common group goals should make social

identity salient, which in turn would provide the motivation for group members to coordinate their efforts as a team.

Tjosvold (1990) investigated the behaviors of flight crews when faced with critical in-flight events. He hypothesized that crews who shared cooperative (as opposed to competitive) goals would be better able to share information and problem solve as a team when faced with threats to the safety of the aircraft. The 35 participants were all volunteers from a major international carrier and consisted of 27 captains, first officers, and second officers along with 8 flight attendants. It is noteworthy that flight attendants were included at a time when most research focused exclusively on the flightdeck crew. The airline crews were interviewed on an individual basis and asked to provide examples of both safe and, in contrast, ineffective management of safety threats they had experienced. Tjosvold's hypothesis was supported in that crew members with cooperative goals indicated that they were able to work more effectively to find ways to mitigate safety threats. Common tasks and a shared purpose (the safety of the flight) had produced positive mutual interdependence.

Based on the foregoing research we hypothesized that emphasizing the social aspects of identity (as opposed to the personal aspects of identity) would increase the willingness of professional flight attendants working for a major airline to engage in positive teamwork behaviors, particularly those focused on coordination, communication, and cooperation. The aim of our research was to determine if temporarily increasing the salience of the top-level organizational identity (the airline) would (at least temporarily) diminish what Ashforth and Johnson (2001, p. 37) refer to as "the gravitational tug toward lower level identities" and promote an inclination toward greater cooperation with workers from different groups within the same organization.

The salience of either social or personal identity was manipulated by asking participants to read and complete a short (six or seven items) questionnaire emphasizing either personal identity or social identity. The personal items exclusively concerned self-evaluations and feelings whereas the social items all used the airline's

name to link the individual to the organization. This priming was completed prior to participants reading a brief description of an actual in-flight incident on one of the company's own aircraft and then completing a specially designed questionnaire on intergroup and intra-group teamwork and cooperation.

METHOD

Participants. Two groups of cabin crew working for the same airline based in their home country ($n = 254$) or overseas ($n = 230$) were targeted for the study. The home-based crew flew domestic and short-haul routes on a single-aisle twin-jet aircraft. The overseas crew flew long-haul routes on four-engine wide-body aircraft. There was no overlap or opportunity for the two groups to meet and discuss the experimental materials.

Materials. (a) A seven-item self-perception scale adapted from Verkuuyten and Hagendoorn (1998). Items included "On the whole I am satisfied with myself" and "I certainly feel useless at times." As the title implies, the questions were entirely directed toward self-reflection, using the personal pronoun "I" 11 times in total. (b) A six-item organizational identity scale taken from Mael (1988) as used by Ashforth and Mael (1989) containing items such as "When someone criticizes (Airline Name) cabin crew it feels like a personal insult" and "(Airline Name)'s successes are my successes." In total, the name of the organization was mentioned six times. These two specific questionnaires, aimed at priming either a personal or a social/organizational identity, constituted the experimental manipulation. A full list of all the items in these questionnaires is shown in the appendix. (c) A brief description of a real in-flight event involving a galley fire on board an aircraft belonging to the airline followed by an 11-item Teamwork Questionnaire. The incident was transcribed for the present research by the captain involved and approved by airline management. The incident was described as follows: "At night approximately 480 nautical miles west of XYZ on the ABC-DEF track, the flight service manager (FSM) advised the Captain that there was fire in an oven in a galley. The area around this particular oven was very

hot and when the door was opened a fire was observed in the back of the oven. The inside rear of the oven was glowing red. It was described as looking like Grandma's bar heater."

The phrase "a galley fire" was used to ensure that crew could not identify the aircraft type involved, and details as to where and when this emergency situation occurred were omitted as well to prevent identification of the incident. The emergency procedures that were implemented were also not described to ensure that participants provided responses on the Teamwork Questionnaire that would be nearest to their own preferences.

The Teamwork Questionnaire items were designed to focus on a variety of actions that could be undertaken in response to a serious in-flight event. These included: "It is important for everyone to show initiative and share ideas in cabin emergencies" (Q6) and "In an emergency I would take immediate action and then report to the FSM" (Q1). The full list of items is shown in Table 1.

Design. There were two manipulated variables in a fully between-subjects design. The first manipulated variable was priming (social identity questions vs. personal identity questions). The second manipulated variable was operational group (domestic/short haul vs. overseas/long haul).

Procedure. All materials were put into an A4 envelope labelled "CRM Survey." Inside each envelope was a cover letter, an information sheet, and a copy of either the self-perception scale or the organizational identity scale. The cover letter, written by the airline's Human Factors Manager, introduced the researcher who had been working with the airline to investigate various crew and flight safety issues as part of CRM program evaluation conducted over a number of years. The information sheet gave details of the overall aim of the research project, who had been invited to participate, what the participants would be asked to do (complete short questionnaires), and that participants' identity would be protected as results would only be reported as a summary of group trends. Contact details were also provided. The precise aim of the study was not communicated.

A copy of the Teamwork Questionnaire was placed inside a smaller sealed envelope and

Table 1: Principal Components Analysis of the Teamwork Questionnaire

Item	Component		
	1	2	3
1. In an emergency I would take immediate action and then report to the FSM	.136	.776	.005
2. I am confident in describing an emergency technical problem to the pilots even if I do not know the correct technical terms	-.192	.710	.042
3. It is important to realize the Captain is in overall command and may delegate communication and teamwork tasks	-.045	.628	.146
4. It is essential that there is one person delegated to give clear, concise, and regular updates to the Captain	.050	.046	.804
5. It is essential, especially in an aircraft emergency, that we (cabin and pilots) work as a team, with clear leadership shown by the FSM	-.084	.038	.452
6. It is important for everyone to show initiative and share ideas in cabin emergencies	.308	.329	.585
7. I feel more confident in reporting to the FSM than the pilots as we work together more frequently in the cabin and know each other better	.672	-.216	.001
8. It is vital for one of the pilots (when directed by the Captain) to come back and see the technical emergency for themselves	.789	-.032	.079
9. It is the pilots' responsibility to keep the passengers informed of the situation and reassure them	.826	.134	.003
10. The most important factor in successfully dealing with an emergency situation is the expertise and motivation of the individual FA	.534	.011	.362
11. Joint EP training has helped me feel more confident in reporting cabin emergencies to the pilots	.156	.085	-.217

Note. Extraction method: principal component analysis. Rotation method: Varimax with Kaiser normalization. Component loadings >.45 are shown in bold. FSM = flight service manager; FA = flight attendant; EP = emergency procedures.

placed inside the A4 envelope. Participants were instructed to read the cover letter and information sheet and complete the enclosed questionnaire before opening the second envelope. This method of distribution was used to ensure the priming manipulation was read and completed first before the inner envelope, containing the in-flight event and teamwork questionnaire, was opened and completed. This system was considered the best way to protect the primes. The primes had also been protected by the following statement in the cover letter, which read: "I would appreciate you taking 15 minutes of your time to complete this survey.

You will be asked to complete a very short questionnaire, followed by reading a summary of an incident on one of the airline's aircraft. You will then be asked to complete another very short questionnaire following this reading." Half of the envelopes sent to each base (home and overseas) contained the self-perception personal salience prime (Questionnaire A) and half contained the organizational identity social salience prime (Questionnaire B).

The questionnaires were not addressed to named individuals but were randomly distributed directly into flight attendants' personal mail files as this was considered more effective

than simply leaving envelopes in crew rooms. This method also ensured that equal numbers of both Questionnaire A and B were received by participants. The home-based crews received their questionnaires through a mail box drop courtesy of the airline's administrative staff. Questionnaires for the overseas-based crew were distributed into personal mail files and returned through the overseas-base Cabin Crew Manager. A reminder poster was sent to crew bases 2 weeks before the close-off date and cabin crew leaders were also asked to remind crews to complete the survey. Usable completed questionnaires were received from 70 overseas-based flight attendants and 83 home-based flight attendants. This represents an overall response rate of 32%.

RESULTS

Teamwork Questionnaire. The 11-item scale had a Cronbach's alpha of .605. A principal components analysis with Varimax rotation showed four components with eigenvalues greater than one. Cumulatively, these four components accounted for 59.7% of the variance. Inspection of the scree plot (Cattell, 1966) showed a very clear "elbow" after the third component. Loadings of each item on the three-component solution are shown in Table 1.

Inspection of the item loadings showed that four items (7, 8, 9, and 10) loaded on the first component. This component was labeled Job Roles and Responsibilities. Three items (1, 2, and 3) loaded on the second component, which was labeled Intergroup Cooperation, and three items (4, 5, and 6) loaded on the third component, which was labeled Leadership. In summary, the Teamwork Questionnaire was a reliable and internally consistent scale containing three interpretable subscales.

Effects of priming and operational factors. An intergroup cooperation subscale was created by summing scores across items 1, 2, and 3. This unit-weighted summation method of estimating factor scores was considered satisfactory for the present study. Such a technique is supported by Tabachnick and Fidell (2007, p. 626), who state that "For many research purposes this 'quick and dirty' estimate of factor scores is entirely adequate."

A 2 by 2 ANOVA was run to determine the effect of priming (personal or social salience) and operational group (overseas/long haul or domestic/short haul). The dependent variable was scores on the intergroup cooperation subscale. The main effect of priming (personal or social) was highly significant, $F(1, 143) = 7.92$, $p = .006$. The main effect of operational group was also highly significant, $F(1, 143) = 11.99$, $p = .001$. There was no significant interaction between priming (personal or social) and operational group, $F(1, 143) = .704$, $p = .403$.

Similarly, a Job Roles and Responsibilities subscale and a Leadership subscale were created by unit-weighted summation of the scores on the relevant items. Further analyses of variance showed that the main effect of priming (personal or social) was not significant for either Job Roles and Responsibilities or Leadership. The main effect of operational group on the Job Roles and Responsibilities subscale was highly significant, $F(1, 139) = 8.28$, $p = .005$, but there was no effect on the Leadership subscale. There was no significant interaction between priming (personal or social) and operational group for either subscale.

A two-way between-group ANOVA was conducted using the total score on the Teamwork Questionnaire as the dependent variable. The main effect for priming (personal or social) was not significant. The main effect for operational group was also not significant. There was no significant interaction between priming (personal or social) and operational group.

DISCUSSION

Flight attendants who received a social identity priming manipulation became more positively disposed toward behaviors involving intergroup cooperation than did flight attendants who received a personal identity prime. Perceptions of leadership behaviors and job role and responsibility behaviors were not affected by the priming manipulation. Flight attendants' current location and operational role affected both their perceptions of intergroup cooperation and their perceptions of job roles and responsibilities.

These findings suggest that social identity priming may lead to highly specific changes in

perceptions of intergroup communication rather than to any generalized or socially desirable changes in attitudes and perceptions across different areas. The validity of the Teamwork Questionnaire was supported by the differential responses between flight attendants working in large crews on wide-bodied long-haul operations and those working in small crews on narrow-bodied short-haul operations on the Job Roles and Responsibilities subscale and on the Intergroup Cooperation and Teamwork subscale. Both job roles and responsibilities and opportunities for cooperation and teamwork differ between smaller, narrow-bodied aircraft and larger, twin-aisle jets. However, further validation of the Teamwork Questionnaire would obviously be desirable.

The results suggest that the theoretical framework of social identity theory and self-categorization theory may usefully be applied to working teams within the specialized and relatively extreme organizational environment of aviation. This result is new to the research literature as it is the first time that such a theoretically based experimental manipulation has shown the potential utility of social identity and self-categorization theories to generate research-based evidence on ways to foster more positive views toward intergroup cooperation among the flight attendant occupational group.

The results of the experimental manipulation showed that when social/organizational identity was made salient, flight attendants indicated that when faced with an in-flight emergency they would be more likely to engage in effective coordinated team action than when a sense of personal identity had been primed. Consensus toward appropriate team action would also be more likely as the flight attendant team would be working toward a common goal. The results are equally applicable to both of the flight attendant groups operating domestically on short-haul routes or internationally on long-haul routes with different aircraft types.

The finding that cooperation is viewed more positively when social identity is made salient is consistent with much previous research using relatively artificial tasks and undergraduate students. However, these findings have recently

been shown to extend to general populations in a diverse range of countries using a real behavioral outcome (Buchan et al., 2011). The extent to which the increased willingness toward cooperative teamwork and communication shown here would generalize to behavior in the actual operational setting is as yet unknown and requires further research based in realistic team settings.

The approach taken here may be considered complementary to the individual differences approach to collective orientation and teamwork described by Driskell, Salas, and Hughes (2010). The propensity to work collectively was measured using a psychometrically developed 15-item scale and was found to be associated with other measures of cooperativeness and group orientation. In a final study, the Collective Orientation scale was shown to predict performance on a variety of team tasks. It would be an interesting possibility to determine whether the social identity priming manipulation would be more or less effective with individuals differing in collective orientation.

Although the teamwork questionnaire developed here reached acceptable levels of internal consistency, it would be desirable to extend and refine this instrument for future use. At present the subscales are each defined by three or four items so additional item development might increase the scale's reliability. Further validation testing of the scale against other scales and against behavioral criteria would also be desirable. Nevertheless, the present study is a rare, if not unique, example of true theoretically driven experimental research on crew coordination conducted within the ongoing operational requirements of a major airline.

IMPLICATIONS FOR CRM TRAINING

These findings provide an additional tool that could be applied in the development of joint CRM and joint Emergency Procedures (EP) training programs involving both flight attendants and pilots. These are examples of what Ashforth and Johnson (2001) refer to as substantive management involving real changes in organizational practices. Joint training has been highlighted as an effective way of increasing coordination, communication, and teamwork

between pilots and flight attendants (Ford, 2011; Vandermark, 1991) as well as providing the opportunity for both pilots and flight attendants to learn more about each other's roles and responsibilities.

The need for joint training among aircrew was highlighted by the well-known accidents at Kegworth (Air Accidents Investigation Branch, 1990) and Dryden (Moshansky, 1992) in 1989. In both cases cabin crew had significant concerns and possessed vital information that was not communicated to the flightdeck crew. The respective accident reports provided vital information on the importance of cabin-cockpit communication that has subsequently been incorporated into joint CRM programs.

In addition to substantive management, managers control symbolic management, which refers to ways in which the organization portrays and represents itself (Ashforth & Johnson, 2001). This encompasses a variety of strategies designed to pull the workforce away from their more insular subgroup identities toward identification with the organization as a whole. This might include such things as ensuring that the airline's logo features prominently on equipment used in joint CRM or EP training. This would help to cue the sense of superordinate group/organizational identity in which each member regardless of job title and crew position work together to achieve a safe outcome.

Symbolic management includes the use of "we" and "us" rather than "you" and "I" in course materials and joint training exercises to help emphasize the superordinate group identity over the two different subgroup identities. In a study of the formation process of cockpit crews, Ginnett (1993) noted some important differences between captains who were rated as good in creating highly effective teams and those that were relatively poor at this. Ginnett noted that one hallmark of the good captains was an activity that he described as creating a permeable group boundary. This was achieved by referring to both flightdeck and cabin crew as "we." In contrast, the poorly performing captains referenced the flightdeck crew as "we" and the flight attendants as "you." The present study provides theoretically based empirical evidence that supports the importance of creating a more

inclusive "we"-oriented culture in order to promote more effective communication and teamwork across the barrier of the flightdeck door.

While the results of this study have a greater application in the "awareness" stage of CRM training, this does not preclude their application to specific parts of recurrent training. CRM concepts are required to be reinforced in recurrent training in which both pilots and flight attendants are required to complete a detail that involves an in-flight emergency demanding coordinated joint action, teamwork, and leadership. Participants wear casual clothing and/or supplied overalls suited to such actions as crawling through smoke and de-planing down the evacuation slides. Normal hierarchical structures are not cued by uniform.

SUMMARY AND CONCLUSIONS

In accordance with the social identity and social categorization framework, the priming of a salient social/organizational identity (as opposed to a personal identity) has been shown as a potentially useful strategy to apply in aircrew training. Through the various levers of symbolic management this provides airlines with simple and cost-effective ways of making joint CRM training and joint EP training more effective by strengthening the salience of the organizational (airline) identity rather than the lower-order subgroup identities ("pilot," "flight attendant," etc.).

Additional research should focus on direct observations of flight attendant behaviors during EP training in cabin simulators. Such a methodology would overcome the limitation of self-reports in which participants might indicate that they would take particular actions in order to please the investigators or airline managers. The use of behavioral markers would have much to offer in designing studies that would focus on crew interactions in the cabin (Simpson, Owens, & Edkins, 2004).

The further exploration of social identity and social categorization approaches has the potential to be a useful tool with which to explain complex aircrew interactions within an operational setting. Although the present research concerns flight attendants and their perceptions of intergroup cooperation with the flightdeck crew there are of

course other subgroups within the airline (e.g., flight dispatchers, customer service, maintenance crew, etc.). Strategies for achieving higher levels of intergroup cooperation between all these various groups would be of great value. There is much to be gained through further studies, the data from which could be used to inform training curricula and standard operating procedures. Aviation safety research would have an additional strategy in its toolkit.

APPENDIX

Cabin Crew Questionnaire: Social Salience Items

1. When someone criticizes (Airline's Name) cabin crew I feel embarrassed.
2. I am interested in knowing what others think of (Airline's Name) cabin crew.
3. When I talk about (Airline's Name) I usually say "we" instead of "us."
4. (Airline's Name) successes are my successes.
5. When somebody praises (Airline's Name) it feels like a personal compliment.
6. If a media story criticizes (Airline's Name) it feels like a personal insult.

Cabin Crew Questionnaire: Personal Salience Items

1. On the whole I am satisfied with myself.
2. At times I think I am no good at all.
3. I feel I do not have much to be proud of.
4. I take a positive attitude towards myself.
5. I certainly feel useless at times.
6. All in all I am inclined to feel that I am a failure.
7. I wish I could have more respect for myself.

ACKNOWLEDGMENTS

The authors would like to acknowledge the extensive support of the airline concerned as well as that of the flight attendants who participated in this research. Jane Ford would like to acknowledge the support of the University of Otago in providing a grant-in-aid to support the writing up of the present research.

KEY POINTS

- Failures in intergroup teamwork and communication between flight attendants and pilots have been implicated in major aviation disasters
- Social identity and social categorization theories suggest that priming a sense of social identity would lead to greater willingness to engage in intergroup cooperation
- An experimental manipulation of identity salience with 484 flight attendants working for a major international airline showed that social identity priming led to greater willingness to engage in intergroup communication and teamwork than did personal identity priming.

REFERENCES

- Air Accidents Investigation Branch. (1990). *Report No: 4/1990. Report on the accident to Boeing 737-400, G-OBME, near Kegworth, Leicestershire on 8 January 1989*. United Kingdom: Author.
- Ashforth, B. E., & Johnson, S. A. (2001). Which hat to wear? The relative salience of multiple identities in organizational contexts. In M. A. Hogg & D. J. Terry (Eds.), *Social identity processes in organizational contexts* (pp. 31–48). Philadelphia, PA: Psychology Press.
- Ashforth, B. E., & Mael, F. A. (1989). Social identity theory and the organization. *The Academy of Management Review*, *14*(1), 20–39.
- Buchan, N. R., Brewer, M. B., Grimalda, G., Wilson, R. K., Fatas, E., & Foddy, M. (2011). Global social identity and global cooperation. *Psychological Science*, *22*(6), 821–828.
- Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research*, *1*, 245–276.
- Chidester, T. R. (1993). Critical issues for CRM training and research. In E. L. Wiener, B. J. Kanki, & R. L. Helmreich (Eds.), *Crew resource management* (pp. 315–336). San Diego, CA: Academic Press.
- Cooke, N., & Durso, F. (2008). *Stories of modern technology failures and cognitive engineering successes*. Boca Raton, FL: CRC Press.
- Driskell, J. E., Salas, E., & Hughes, S. (2010). Collective orientation and team performance: Development of an individual differences measure. *Human Factors*, *52*, 316–328.
- Ellemers, N., Haslam, S. A., Platow, M. J., & van Knippenberg, D. (2003). Social identity at work: Developments, debates, directions. In H. S. Alexander, D. van Knippenberg, M. J. Platow, & N. Ellemers (Eds.), *Social identity at work: Developing theory for organizational practice* (pp. 3–26). New York, NY: Psychology Press.
- Ford, J. R. (2011). *The effects of joint flight attendant and flight crew CRM training programmes on intergroup teamwork and communication* (Unpublished doctoral dissertation). University of Otago, New Zealand.
- Ford, J. R., Henderson, R., & O'Hare, D. (in press). Barriers to intra-aircraft communication and safety: The perspective of the flight attendants. *International Journal of Aviation Psychology*.
- Ginnett, R. C. (1993). Crews as groups: Their formation and their leadership. In E. L. Wiener, B. J. Kanki, & R. L. Helmreich (Eds.), *Crew resource management* (pp. 71–98). San Diego, CA: Academic Press.
- Hackman, J. R. (1993). Teams, leaders and organizations: New directions for crew-oriented flight training. In E. L. Wiener, B. G. Kanki, & R. L. Helmreich (Eds.), *Cockpit resource management* (pp. 47–69). San Diego, CA: Academic Press.

- Haslam, S. A. (2004). *Psychology in organizations: The social identity approach* (2nd ed.). London: Sage.
- Haslam, S. A., van Knippenberg, D., Platow, M. J., & Ellemers, N. (Eds.). (2003). *Social identity at work: Developing theory for organizational practice*. New York, NY: Psychology Press.
- Helmreich, R. L., & Foushee, H. C. (1993). Why crew resource management? Empirical and theoretical bases of human factors training in aviation. In E. L. Wiener, B. G. Kanki, & R. L. Helmreich (Eds.), *Cockpit resource management* (pp. 3–45). San Diego, CA: Academic Press.
- Helmreich, R. L., & Merritt, A. C. (1998). *Culture at work in aviation and medicine*. Aldershot, UK: Ashgate.
- Helmreich, R. L., Wiener, E. L., & Kanki, B. J. (1993). The future of crew resource management. In E. L. Wiener, B. J. Kanki, & R. L. Helmreich (Eds.), *Cockpit resource management* (pp. 479–501). San Diego, CA: Academic Press.
- Kayten, P. J. (1993). The accident investigator's perspective. In E. L. Wiener, B. J. Kanki, & R. L. Helmreich (Eds.), *Cockpit resource management* (pp. 283–314). San Diego, CA: Academic Press.
- Mael, F. A. (1988). *Organizational identification: Construct redefinition and a field application with organizational alumni* (Unpublished doctoral dissertation). Wayne State University, Detroit, MI.
- Moshansky, V. P. (1992). *Commission of Inquiry into the Air Ontario Accident at Dryden, Ontario: Final report* (Vols. 1–4). Ottawa, Ontario: Minister of Supply and Services, Canada.
- National Transportation Safety Board. (1990). *Air Accident Report: United Airlines Flight 232, McDonnell-Douglas DC10-10, Sioux City Gateway Airport, Sioux City, Iowa. July 19, 1989* (NTSB/AAR-90/06). Washington, DC: Author.
- O'Connor, P., Flin, R., & Fletcher, G. (2002). Techniques used to evaluate Crew Resource Management training: A literature review. *Human Factors and Aerospace Safety*, 2, 217–233.
- O'Hare, D., & Roscoe, S. N. (1990). *Flightdeck performance: The human factor*. Ames, IA: Iowa State University Press.
- Salas, E., Burke, C. S., Bowers, C. A., & Wilson, K. A. (2001). Team training in the skies: Does crew resource management (CRM) training work? *Human Factors*, 43(4), 641–674.
- Salas, E., Wilson, K. A., Burke, C. S., & Wightman, D. C. (2006). Does crew resource management training work? An update, an extension and some critical needs. *Human Factors*, 48(2), 392–412.
- Simpson, P., Owens, C., & Edkins, G. (2004). Cabin crew expected safety behaviours. *Human Factors and Aerospace Safety*, 4, 153–167.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson.
- Tajfel, H. (1970). Experiments in intergroup discrimination. *Scientific American*, 223(5), 96–102.
- Tajfel, H. (1974). Social identity and intergroup behaviour. *Social Science Information*, 13, 65–93.
- Tjosvold, D. (1990). Flight crew collaboration to manage safety risks. *Group and Organizational Studies*, 159(2), 177–191.
- Vandermark, M. J. (1991). Should flight attendants be included in CRM training? *International Journal of Aviation Psychology*, 1(1), 87–94.
- Van Knippenberg, D., & Ellemers, N. (2003). Social identity and group performance: Identification as the key to group-oriented effort. In S. A. Haslam, D. van Knippenberg, M. J. Platow, & N. Ellemers (Eds.), *Social identity at work: Developing theory for organizational practice* (pp. 29–42). New York, NY: Psychology Press.
- Verkuuyten, M., & Hagendoorn, L. (1998). In-group favouritism and self-esteem: The role of identity and trait valence. *Group Processes and Intergroup Relations*, 5(4), 285–297.
- Wegge, J., & Haslam, S. A. (2003). Group goal setting, social identity and self-categorization: Engaging the collective self to enhance group performance and organizational outcomes. In S. A. Haslam, D. van Knippenberg, M. J. Platow, & N. Ellemers (Eds.), *Social identity at work: Developing theory for organizational practice* (pp. 43–59). New York, NY: Psychology Press.

Jane Ford is an assistant research fellow at the University of Otago in Dunedin. She obtained her PhD in psychology from the University of Otago in 2011.

David O'Hare is an associate professor of psychology at the University of Otago in Dunedin, New Zealand. He obtained his PhD in experimental psychology from the University of Exeter in England in 1978.

Robert Henderson is an airline training captain and fellow of the Centre for Leadership Innovation at Bedfordshire University in England. He obtained an MSc (1st Class Honours) from the University of Auckland in 2001.

Date received: September 4, 2011

Date accepted: September 19, 2012