The effects of organizational communication on job satisfaction and organizational commitment in a land ambulance service and the mediating role of communication satisfaction

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Abstract

Purpose – The purpose of this paper is to provide further insight into the relationship between internal communication practices, communication satisfaction, job satisfaction, and organizational commitment. It is centered in the emergency services sector in general, and on land ambulance services in particular. The focus organization is a large urban land ambulance service with an operating budget of approximately $50 million and 468 employees.

Design/methodology/approach – Only paramedics were eligible to participate in the study. In total, 91 (32.5 per cent) of the organization's 280 paramedics participated. Data were collected using a questionnaire comprising pre-existing work-related psychometric measures. The measures included the Communication Audit Survey, the Communication Satisfaction Questionnaire, the Minnesota Satisfaction Questionnaire and the Affective Organizational Commitment Scale. Only quantitative data were collected.

Findings – The data showed that internal communication practices explained 49.8 per cent of the variation in communication satisfaction, 23.4 per cent of the variation in job satisfaction, and 17.5 per cent of the variation in affective organizational commitment. However, these effects were fully mediated by communication satisfaction when job satisfaction and affective organizational commitment were regressed against both internal communication practices and communication satisfaction.

Research limitations/implications – These findings have important practical and theoretical implications. Managers will not be able to foster job satisfaction and affective organizational commitment through internal communication practices unless they recognize and appreciate what information is valued by employees. Second, managers must have a clear understanding of both the quantity and quality of information desired by employees if they are to design internal communication systems that meet the information needs of employees. Finally, one must consider the possibility that, for employees, communication satisfaction represents a fundamental yardstick against which all of the organization's activities and change initiatives are measured. This possibility is supported by research from the domain of change management.

Originality/value – Given the present shortage of skilled and able emergency personnel, it is in the best interest of organizations to enhance job satisfaction and commitment of such critical employees.

Keywords Communication, Communication processes, Job satisfaction, Paramedics

Paper type Research paper

Introduction

Communication is central to the practice of management. Managers spend 75 per cent or more of their work time engaged in some form of communication. (Mintzberg, 1973, p. 38; Klemmer and Snyder, 1972). There is good reason for this. Evidence suggests that, to some extent, more is better when it comes to internal communication. Research by Yammarino and Naughton (1988) demonstrates a positive relationship between the amount of time spent communicating and important work outcomes such as the level of effort expended by employees and employee job satisfaction. As a result of these and similar findings, many organizations have invested significant financial and human resources toward developing effective and efficient internal communication systems to facilitate the communication of relevant and timely information to employees at all levels of the organization.

The purpose of this study is to provide further insight into the relationship between internal communication practices, communication satisfaction, job satisfaction, and organizational commitment. Specifically, we intend to test the hypothesis that communication satisfaction acts as a mediator between an organization's internal communication systems and two important job outcomes: job satisfaction and affective organizational commitment. Our study is focused in the emergency services sector in general, and on land ambulance services in particular. The sample used in this study is a critical population, and we know from previous research that job satisfaction and organizational commitment are among the best predictors of turnover intentions. There is already a shortage of skilled and able emergency personnel and thus, it is the best interest of land ambulance organizations to find ways to enhance job satisfaction and organizational commitment of such employees. Paramedical personnel operate under pressure and communication practices that are ineffective and inefficient can increase their frustration with the organization.

Managers of land ambulance service operations face several complex challenges in their efforts to foster communication satisfaction and efficiency amongst front-line staff. First, as an emergency service provider, land ambulance service operations must maintain "24/7/365" response capabilities. This demands that paramedics work non-standard work hours. However middle and top managers generally maintain traditional office hours. This scheduling dichotomy gives rise to the possibility of a communication gap or "disconnect" between managers and their front-line staff. Second, land ambulance service operations operate with a high degree of spatial differentiation, "which refers to the degree to which the location of an organization's offices, plants and personnel is dispersed geographically" (Robbins and Barnwell, 1998, p. 79). This minimizes the opportunity for meaningful face-to-face interactions between paramedics and managers at all levels of the organization. Third, the mobile nature of land ambulance service operations makes it difficult for managers to communicate with paramedic staff who are in transit between fixed posts. Finally, in many land ambulance service operations, high emergency call volumes keep paramedic crews busy for much of their shift making it difficult, if not impossible, for managers to communicate with employees who are busy tending to the sick and injured. All of these factors synergistically combine to minimize the extent to which paramedics can actively engage in meaningful internal organization communication. This could lead to a sense of isolation amongst paramedics from the rest of the organization (Cascio, 2000).

Theory and hypotheses

Research interest in the domain of internal communication dates back to the beginning of the twentieth century. Over the last hundred years, a large body of literature has emerged. Despite a century of enquiry, interest on the subject matter remains strong. This seems largely due to the increasing complexity of modern organizations, the dynamic and diverse environments in which they operate, and rapid advances in, and important experiences with, the information technologies they use to communicate and interact with employees (Bélanger and Watson-Manheim, 2006; Byrne and LeMay, 2006; Turner *et al.*, 2006). While many relationships within the domain of internal communication have been examined, some of the more interesting involve those between employee perceptions of internal communication and work attitudes. This is because work attitudes are known to be related with significant and meaningful work outcomes at both the individual and organizational level. One of the most studied relationships between communication satisfaction and work attitudes is that involving job satisfaction. A more recent and less understood relationship is that between communication satisfaction and organizational commitment. Job satisfaction and organizational commitment are perhaps the two most common attitudinal variables discussed in the academic literature. This is because an employee's evaluation of his or her job and his or her commitment to the organization have been related with important job outcomes, including employee withdrawal (Cohen, 1993a), organizational citizenship behaviours (Ilies *et al.*, 2006; Cohen, 1999), counterproductive work behaviours (Spector *et al.*, 2006), and job performance (Carmeli and Freund, 2004).

Communication practices and communication satisfaction

An organization's internal communication practices consist of the full spectrum of communication activities, both formal and informal, undertaken by its members for the purpose of disseminating information to one or more audiences within the organization. This general but comprehensive definition is necessary to accurately reflect the true nature and breadth of such practices. Internal communication practices may be undertaken for the purpose of downward, horizontal, or upward communication and may be initiated by anyone within the organization. However, it remains the responsibility of management to ensure that an effective and efficient internal communication system is in place so as to ensure that all employees are provided with timely, important, and relevant information.

Communication satisfaction, "the satisfaction with various aspects of communication in an organization" (Crino and White, 1981), is related to, but not synonymous with, communication practices. The relationship is one of antecedent (communication practices) and consequent (communication satisfaction). Communication satisfaction is an employee's affective appraisal of the organization's communication practices and is a multidimensional construct. Though the exact number of dimensions that comprise communication satisfaction is not known, eight are routinely identified:

(1) communication climate;

(2) communication with supervisors;

(3) organizational integration;

(4) media quality;

(5) horizontal and informal communication;

(6) organizational perspective;

(7) personal feedback; and

(8) communication with subordinates.

This is likely due to the prevalence of use of the Communication Satisfaction Questionnaire (CSQ) (Downs and Hazen, 1977). It has been suggested that the CSQ is "arguably the best measure of communication satisfaction in the organizational arena" (Clampitt and Downs, 1993). A recent study conducted on the merits and restrictions of the CSQ concluded that it is an appropriate instrument for gaining overall insights into the way employees evaluate aspects of organizational communication but that the method is less suitable for diagnosing specific communication problems and formulating recommendations (Zwijze-Koning and de Jong, 2007). As with most multidimensional constructs, certain dimensions of communication satisfaction are more important than others in fostering overall satisfaction. Communication audits consistently show that communication climate, communication with supervisors (Madlock, 2008), and personal feedback are the dimensions most strongly correlated with overall communication satisfaction (Downs and Adrian, 2004, p. 155; Downs and Hazen, 1977).

The link between internal communication practices and employee communication satisfaction is well established. Communication audits reveal that greater communication efforts tend to result in higher levels of communication satisfaction (Hargie *et al.*, 2002). While some researchers have suggested that an organization's members will desire "more information from other organization members regardless of the amount of information they currently receive" (Zimmerman *et al.*, 1996), others have shown that improved internal communication decreases the gap between the amount of information that employees desire and the amount of information they receive (Hargie *et al.*, 2002). Nevertheless, both findings highlight the importance of internal communication to employees. This creates an important dilemma for managers: what information, and how much of it, should be disseminated to organization members? While it is obvious that timely, relevant information is essential for high levels of job performance, there is a point at which information overload occurs and well-documented negative consequences ensue (Eppler and Mengis, 2004).

Adopting and supporting effective internal communication practices is important for all organizations. This is particularly true for organizations operating with high spatial differentiation. Research in telecommuting and virtual teams identifies effective communication as a critical element for the success of such work arrangements due to their high degree of spatial differentiation (Horwitz *et al.*, 2006; Kowalski and Swanson, 2005). Land ambulance services are one example of organizations operating with high spatial differentiation. This is necessary to fulfill their mission to provide timely and effective care to the critically ill and injured. Because the location of the "next victim" cannot be predicted, paramedic crews must be deployed throughout a service's geographic coverage area. Thus, paramedics are often based in single-crew stations and/or remain mobile for much of their shift. The net effect is prolonged isolation from

co-workers and managers. This could lead to an erosion of trust (Cascio, 2000), which is an essential element of effective communication.

  H1. Paramedics' appraisal of their organization's internal communication practices will be significantly and positively related with communication satisfaction.

Communication satisfaction and job satisfaction
Job satisfaction is defined as "a person's evaluation of his or her job and work context" (McShane, 2004, p. 115) and as a "global feeling about the job or as a related constellation of attitudes about various aspects or facets of the job" (Spector, 1997, p. 2). As with communication satisfaction, there is no consensus on the number of dimensions which comprise the construct, though these commonly range from five to twenty depending on the psychometric measure used. Commonly assessed dimensions of job satisfaction include satisfaction with pay, promotion, supervision, benefits, contingent rewards, operating conditions, coworkers, nature of work, and communication (Spector, 1985, p. 3, 8-19).

Research shows that job satisfaction is positively related to organizational citizenship behaviours (Gonzalez and Garazo, 2006; Ilies *et al.*, 2006; Ackfeldt and Coote, 2005; Becker and Billings, 1993) and prosocial behaviour (McNeely and Meglino, 1994). Additionally, while results have been inconsistent, there is evidence to suggest that job satisfaction may be positively related with employee performance (Karatepe and Tekinkus, 2006; Carmeli and Freund, 2004; Carr *et al.*, 2003; Judge *et al.*, 2001), and organizational performance (Schneider *et al.*, 2003). Research also shows job satisfaction to be negatively related with burnout (Burke *et al.*, 2006; Tsigilis *et al.*, 2004; Lee and Ashforth, 1993), intention to leave the organization (Hwang and Kuo, 2006; Parker and Kohlmeyer, 2005; Tuten and Neidermeyer, 2004; Boshoff and Mels, 2000; Cohen, 2000; Becker and Billings, 1993; Cohen, 1993a; Blau and Boal, 1989), intention to leave the job (Cohen, 1993a), intention to leave the occupation (Cohen, 1993a), tardiness (Iverson and Deery, 2001; Koslowsky *et al.*, 1997; Blau, 1986), early departure (Iverson and Deery, 2001), absenteeism (Hardy *et al.*, 2003; Iverson and Deery, 2001; Scott and Taylor, 1985), and counterproductive work behaviours other than those previously identified (Spector *et al.*, 2006; Penney and Spector, 2005).

Meaningful investigation into the relationship between communication satisfaction and job satisfaction was first undertaken by Herzberg in the 1960s (Downs and Hazen, 1977). However, a significant body of research did not begin to emerge until the mid-to-late 1970s (Pincus, 1986). Initially, much of the research focused on job satisfaction as it related to communication with an employee's supervisor. Further research undertaken by Foehrenbach and Ruch in the 1980s demonstrated an important link between an employee's satisfaction with organizational communication and the communication efforts of top management (Pincus, 1986). A review of the literature on the communication-job satisfaction relationship reveals a significant positive correlation between these two constructs (Pincus, 1986; Muchinsky, 1977). Employees reporting higher levels of communication satisfaction tend to be more satisfied with their employment situation (Goris, 2007). Apart from supervisory communication, further findings indicate that satisfaction with other factors such as

personal feedback and communication climate also are strongly related to job satisfaction (Downs and Adrian, 2004, p. 155).

> *H2a.* Paramedics' appraisal of their organization's internal communication systems will be significantly and positively related to job satisfaction.

> *H2b.* Communication satisfaction will mediate the relationship between paramedics' perception of their organization's internal communication systems and their level of job satisfaction (Figure 1).

Communication satisfaction and affective organizational commitment
Organizational commitment is a "psychological stabilizing or obliging force that binds individuals to courses of action relevant" to the organization (Bentein *et al.*, 2005). Initially conceptualized as a unidimensional construct, organizational commitment is now known to be multidimensional in nature. The most common forms of organizational commitment studied and reported on in the academic literature are affective commitment, continuance commitment, and normative commitment. However, since affective commitment is more likely to reflect primary feelings and attitudes toward the job and its components, it dominates the organizational commitment literature. Affective organizational commitment specifically refers to "the employee's emotional attachment to, identification with, and involvement in the organization" (Meyer and Allen, 1991).

Existing research reveals that organizational commitment is positively related to job satisfaction (Cohen, 1993b; Mathieu and Zajac, 1990; Bateman and Strasser, 1984; Mowday *et al.*, 1979), organizational citizenship behaviours (Cohen, 1999; Gregersen, 1993), motivation (Mathieu and Zajac, 1990), attendance (Mathieu and Zajac, 1990), job performance (Mowday *et al.*, 1979), and life satisfaction (Cohen, 1999). Furthermore, it is negatively related to tardiness (Blau, 1986), absenteeism (Cohen, 2000; Cohen, 1999), intent to leave the organization (Boshoff and Mels, 2000; Cohen, 2000; Cohen, 1999; Cohen, 1993a; Jaros *et al.*, 1993; Mathieu and Zajac, 1990; Blau and Boal, 1989), and turnover (Bentein *et al.*, 2005; Griffeth *et al.*, 2000; Blau and Boal, 1989; Mowday *et al.*, 1979).

Despite the importance attributed to both internal communication and organization commitment, little is known about the relationship between these two constructs. Only two studies discussing this relationship have been published (Ng *et al.*, 2006; Varona, 1996). In both cases, a positive relationship between communication satisfaction and organizational commitment was identified.
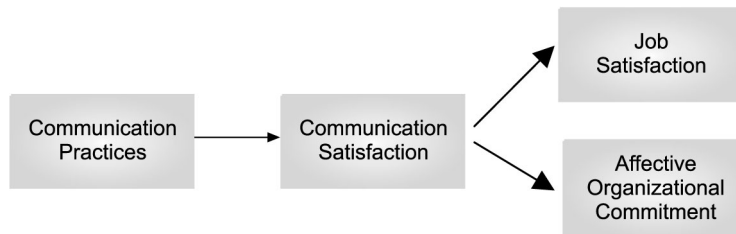

Figure 1.

H3a. Paramedics' appraisal of their organization's internal communication systems will be significantly and positively related to affective organizational commitment.

H3b. Communication satisfaction will mediate the relationship between paramedics' perception of their organization's internal communication systems and their level of affective organizational commitment (Figure 1).

Method

Sample

The focus organization for this study was a large Canadian municipal land ambulance service. During the survey period, the organization employed 468 staff and had an operating budget of approximately $50 million. Paramedics represented approximately 54 per cent of the workforce. The organization was the sole land ambulance service provider in its geographic area and responded to over 90,000 emergency and non-emergency calls in 2004, the last year for which such data were available. Only paramedics were eligible for inclusion in the study. Participation was voluntary. Questionnaires were distributed to each of the organization's 280 active paramedics via the company's internal mail system. A total of 91 (32.5 per cent) questionnaires were returned. The respondents' mean age was 32.8 years (SD = 8.3 years). The majority of the respondents were male (74.7 per cent) and married or cohabitating (75.8 per cent). All respondents had completed one or more post-secondary programs. The mean organizational tenure was 3.5 years (SD = 1.9 years).

Measures

The study questionnaire, developed by the researchers, was comprised of pre-existing work-related psychometric measures. Only quantitative data were collected.

Internal communication practices. Goldhaber and Rogers' (1979); see also Downs and Adrian, 2004 Communication Audit Survey (CAS), was used to assess employee perceptions of the organization's internal communication practices. In its traditional form, the CAS consists of 122 items divided into eight subscales:

(1) information received from others;

(2) information sent to others;

(3) follow-up on information sent to others;

(4) key sources of information;

(5) timeliness of information received from key sources;

(6) organizational communication relationships;

(7) organizational outcomes; and

(8) channels of information (Downs and Adrian, 2004, p. 124; Goldhaber, 1979).

Several changes to the CAS were made. First, two of the subscales were eliminated from the study questionnaire: organizational communication relationships and organizational outcomes. These subscales were excluded in favour of alternative psychometric measures. Second, "pager" and "e-mail" were added to the channels of information subscale due to their prevalent use within the focus organization. All of the

subscales except timeliness of information received from key sources require respondents to provide two responses, one indicating the respondent's perception of the current state of communication practices and another indicating the respondent's desired state of communication practices. The timeliness of information received from key sources only requires respondents to rate the timeliness of information currently received. In the former case, difference scores can be calculated between the current state of communication and the desired state of communication. Responses for all subscales were measured using a 5-point Likert scale. The verbal anchors used for the four subscales allowing for difference scores ranged from: 1 = "very little" to 5 = "very great". The verbal anchors for the timeliness of information subscale ranged from 1 = "very untimely" to 5 = "very timely". None of the questions were reverse-scored.

Satisfaction with internal communication. The Communication Satisfaction Questionnaire (CSQ), developed by Downs and Hazen (1977), was used to assess employee satisfaction with internal communication. Traditionally, this measure consists of 40 items covering eight dimensions:

(1) communication climate;

(2) communication with supervisors;

(3) organizational integration;

(4) media quality;

(5) horizontal and informal communication;

(6) organizational perspective;

(7) personal feedback; and

(8) communication with subordinates.

For the purposes of this investigation, the communication with subordinates subscale was eliminated from the study questionnaire because paramedics are not supervisory personnel and thus do not have subordinates. Responses were measured using a 7-point Likert scale with the following verbal anchors: 1 = "very dissatisfied", 2 = "moderately dissatisfied", 3 = "slightly dissatisfied", 4 = "indifferent", 5 = "slightly satisfied", 6 = "moderately satisfied", and 7 = "very satisfied". None of the questions were reverse-scored.

Job satisfaction. The Minnesota Satisfaction Questionnaire (MSQ), developed by Weiss *et al.* (1967), was used to assess employee job satisfaction. This measure exists in both a long (100 item) and short (20 item) form. Because of concerns related to the length of the questionnaire, the researchers felt that the short form was more appropriate for this study. Both versions of the form cover two dimensions of job satisfaction:

(1) intrinsic job satisfaction; and

(2) extrinsic job satisfaction.

No changes to the original design of the MSQ short form for this study. Responses were measured using a 7-point Likert scale with the following verbal anchors: 1 = "very dissatisfied", 2 = "moderately dissatisfied", 3 = "slightly dissatisfied",

4 = "indifferent", 5 = "slightly satisfied", 6 = "moderately satisfied", and 7 = "very satisfied". None of the questions was reverse-scored.

Affective organizational commitment. The Affective Organizational Commitment Scale (AOCS), developed by Meyer and Allen (1991), was used to assess employee affective organizational commitment. No changes were made to the original design of the measure for this study. Responses were measured using a 7-point Likert scale with the following verbal anchors: strongly disagree, moderately disagree, slightly disagree, indifferent, slightly agree, moderately agree, and strongly agree. Four of the eight questions were reverse-scored.

Control measures. Respondents were asked to provide information relating to eight demographic variables:

(1) age;

(2) sex;

(3) highest level of education completed;

(4) marital status;

(5) number of children;

(6) organizational tenure;

(7) shift duration; and

(8) shift pattern.

Results

The central question of this study is whether communication satisfaction mediates the relationship between:

- communication practices and job satisfaction; and
- communication practices and affective organizational commitment.

While numerous approaches and related methodologies exist for testing mediation, we chose to adopt a "causal steps approach" (Mackinnon *et al.*, 2002). This approach, first introduced by Judd and Kenny (1981) and later refined by Baron and Kenny (1986), remains "the most commonly used approach in the psychological literature" (Mackinnon *et al.*, 2002). Testing for mediation is a three-stage process. In stage 1, bivariate analysis is performed to establish the relationships between study variables. To support a hypothesis of mediation, the correlation between the independent and the dependent variables, and the mediator and the dependent variables, must be significant. If this is the case, then the second step can be considered. In stage 2, a series of regression analyses are performed: first, the mediator is regressed on the independent variable; second, the dependent variable is regressed on the independent variable; and third, the dependent variable is regressed on both the independent variable and the mediator (Baron and Kenny, 1986; Judd and Kenny, 1981). Further support for a mediation hypothesis exists only if the independent variable affects the mediator in the first equation; the independent variable affects the dependent variable in the second equation; and the mediator affects the dependent variable in the third equation (Baron and Kenny, 1986). Finally, in stage 3, the effect of the independent variable and the mediator on the dependent variable is reviewed. If mediation is present, the effect of the independent variable on the dependent variable will be less in

the third regression analysis than in the second (Baron and Kenny, 1986). Full mediation is present if "the independent variable has no effect when the mediator is controlled for" (Baron and Kenny, 1986).

Correlations between predictors, mediator and outcomes

Bivariate correlations. Correlations and descriptive statistics are presented in Table I. Several control variables showed significant correlations with the variables in the proposed model. First, organizational tenure had a moderate negative correlation with paramedics' perception of communication practices ($r = -0.31$, $p < 0.05$), communication satisfaction ($r = -0.34$, $p < 0.01$), job satisfaction ($r = -0.32$, $p < 0.01$), and affective organizational commitment ($r = -0.33$, $p < 0.01$). This implies that perceptions of communication practices, communication satisfaction, job satisfaction and affective organizational commitment deteriorate as length of service with the organization increases. Second, shift pattern had a moderate positive correlation with communication satisfaction ($r = 0.26$, $p < 0.05$), job satisfaction ($r = 0.30$, $p < 0.01$), and affective organizational commitment ($r = 0.23$, $p < 0.05$). This suggests that employees working 12-hour shifts had higher levels of communication satisfaction, job satisfaction and affective organizational commitment compared to their colleagues working 8-hour shifts. Third, age had a minor negative correlation with job satisfaction ($r = -0.22$, $p < 0.05$) suggesting that younger employees were slightly more satisfied with their job than older employees.

Of greater importance is the correlation between the predictor variable (communication practices) and the outcome variables (job satisfaction and affective organizational commitment) and that between the mediator variable (communication satisfaction) and the outcome variables. As noted in Table I, internal communication practices are significantly and positively correlated with job satisfaction ($r = 0.48$, $p < 0.01$) and affective organizational commitment ($r = 0.42$, $p < 0.01$). Furthermore, there is a strong correlation between the mediator and outcomes in our proposed model. As can be seen, communication satisfaction has a strong positive correlation with both job satisfaction ($r = 0.72$, $p < 0.01$) and affective organizational commitment ($r = 0.60$, $p < 0.01$). Hence, the initial requirements for mediation are met.

Regression analyses and interpretation of results

To further test the hypotheses, we conducted mediated regression analyses, using the procedure outlined by Baron and Kenny (1986). Testing for mediation effects requires multiple stages of analyses. The first step requires demonstration that the independent variables are related to the mediating variable. The second step requires showing the independent variables are related to the dependent variables. The third step involves demonstrating that the mediating variable is related to the dependent variables. The final step involves demonstrating that the relationship between independent variable and dependent variables is non-significant (full mediation) or is significantly reduced (partial mediation) when the effect of mediator on the dependent variable is statistically controlled. The results are presented in Table II.

Predictors related to potential mediator. Linear regression analysis was performed to test the hypothesis that paramedics' appraisal of their organization's internal communication practices will be significantly and positively related with communication satisfaction (*H1*). The results of this analysis are presented in Table II. The control variables (age, gender, education, marital status, number of

Variable	Mean	SD	Age	Sex	Education	Marital status	Children	Org. tenure	Shift duration	Shift pattern	CAS	CSQ	MSQ	AOCS
Age	32.84	8.30												
Sex	1.25	0.44	−0.27**											
Education	3.18	0.38	0.10	−0.07										
Marital status	1.76	0.43	0.22*	−0.14	0.13									
Children	0.80	1.09	0.60**	−0.22*	0.17	0.30**								
Org. tenure	3.47	1.89	0.49**	−0.06	−0.12	0.30**	0.34**							
Shift duration	11.73	1.00	−0.15	−0.05	−0.12	0.06	−0.01	−0.12						
Shift pattern	1.80	0.40	−0.29**	0.16	0.23*	0.04	−0.04	−0.02	0.54**					
CAS	−0.79	0.69	0.02	−0.03	−0.17	−0.23	0.10	−0.31*	−0.11	−0.07	(0.94)			
CSQ	3.37	1.02	−0.14	0.01	0.13	−0.19	0.02	−0.34**	0.16	0.26*	0.70**	(0.95)		
MSQ	4.74	0.97	−0.22	0.08	0.07	−0.12	−0.06	−0.32**	0.17	0.30**	0.48**	0.72**	(0.89)	
AOCS	3.49	1.30	−0.16	−0.01	0.03	−0.09	−0.18	−0.33**	0.10	0.23*	0.42**	0.60**	0.73**	(0.84)

Notes: Acronyms: CAS – Communication practices as measured by the Communication Audit Survey (ICA); CSQ – Communication satisfaction as measured by the Communication Satisfaction Questionnaire (Downs and Hazen, 1977); MSQ – Job satisfaction as measured by the Minnesota Satisfaction Questionnaire (Weiss *et al.*); AOCS – Affective organizational commitment as measured by the Affective Organizational Commitment Scale (Meyer and Allen, 1991). Scoring template for control variables: Sex – 1 = male, 2 = female; Education – 1 = grade school, 2 = high school, 3 = community college, 4 = university; Marital status – 1 = single, 2 = married or cohabiting; Children – Number; Org. tenure – Number of years; Shift duration – Hours; Shift pattern – 1 = fixed, 2 = rotating (shift work). Numbers in parentheses represent Cronbach's alpha scores; *Correlation is significant at the 0.05 level; **Correlation is significant at the 0.01 level; *n* = 50 to 91 due to missing data

Table I.
Mean, standard
deviation, correlations,
and scale reliability

Variables	R^2	ΔR^2	β	T	p
Step 1: Predictors related to potential mediator					
(*n* = 48 due to missing data)	0.501				
Age			0.08	− 0.48	NS
Sex			0.01	0.03	NS
Education			0.01	0.05	NS
Marital status			− 0.23	− 1.61	NS
Number of children			0.21	1.40	NS
Organizational tenure		0.085	− 0.29	− 2.07	0.044
Shift duration			− 0.02	0.16	NS
Shift pattern			0.22	1.56	NS
Communication practices		0.415	0.69	6.12	0.000
Job satisfaction as dependent variable					
Step 2: Predictors related to dependant variable					
(*n* = 53 due to missing data)	0.481				
Age			− 0.12	− 0.90	NS
Sex			0.06	0.46	NS
Education			− 0.05	− 0.41	NS
Marital status			− 0.21	− 1.68	NS
Number of children			0.07	0.56	NS
Organizational tenure		0.098	− 0.31	− 2.61	0.012
Shift duration			0.00	0.03	NS
Shift pattern		0.186	0.43	3.41	0.001
Communication practices		0.198	0.47	4.32	0.000
Step 3: Potential Mediator related to dependant					
variable (*n* = 70 due to missing data)	0.578				
Age			− 0.12	− 0.98	NS
Sex			− 0.03	− 0.24	NS
Education			0.04	0.34	NS
Marital status			− 0.14	− 1.24	NS
Number of children			− 0.04	− 0.33	NS
Organizational tenure		0.086	− 0.29	− 2.69	0.009
Shift duration			0.01	0.11	NS
Shift pattern		0.122	0.35	3.08	0.003
Communication satisfaction		0.370	0.66	7.60	0.000
Step 4: Testing for mediation effect model					
(*n* = 47 due to missing data)	0.61				
Age			− 0.09	− 0.67	NS
Sex			0.04	0.25	NS
Education			− 0.02	− 0.16	NS
Marital status			− 0.22	− 1.68	NS
Number of children			0.06	0.472	NS
Organizational tenure		0.071	− 0.27	− 2.08	0.043
Shift duration			0.00	0.026	NS
Shift pattern		0. 207	0.46	3.43	0.001
Communication satisfaction		0.332	0.62	6.05	0.000
Communication practices			0.13	0.86	NS

(*continued*)

Table II.
Mediated regression
analysis results

Variables	R^2	ΔR^2	β	T	p
Affective organizational commitment as dependent variable					
Step 2: Predictors related to dependant variable					
(*n* = 55 due to missing data)	0.200				
Age			0.03	0.17	NS
Sex			0.15	1.08	NS
Education			−0.08	−0.59	NS
Marital status			−0.07	−0.54	NS
Number of children			−0.02	−0.17	NS
Organizational tenure		0.075	−0.28	−2.08	0.043
Shift duration			−0.02	−0.13	NS
Shift pattern			0.22	1.71	NS
Communication practices		0.124	0.37	2.84	0.006
Step 3: Potential mediator related to dependant variable (*n* = 73 due to missing data)	0.393				
Age			−0.05	−0.42	NS
Sex			−0.01	−0.12	NS
Education			−0.04	−0.30	NS
Marital status			−0.03	−0.29	NS
Number of children			−0.11	−0.89	NS
Organizational tenure		0.105	−0.32	−2.88	0.005
Shift duration			−0.08	−0.73	NS
Shift pattern		0.054	0.23	2.13	0.037
Communication satisfaction		0.234	0.53	5.15	0.000
Step 4: Testing for mediation effect model (*n* = 47 due to missing data)	0.342				
Age			−0.12	−0.95	NS
Sex			0.18	1.51	NS
Education			−0.11	−0.93	NS
Marital status			−0.03	−0.22	NS
Number of children			−0.20	−1.67	NS
Organizational tenure			−0.14	−1.16	NS
Shift duration			0.02	0.19	NS
Shift pattern			0.16	1.28	NS
Communication satisfaction		0.342	0.59	4.84	0.000
Communication practices			−0.04	−0.21	NS

Note: NS = Not significant ($p > 0.05$)

Table II.

children, organizational tenure, shift duration and shift pattern) were entered in the first step. The control variables accounted for 8.5 per cent of the variance in the communication satisfaction variable. Organizational tenure was the only variable with a significant regression coefficient ($\beta = -0.29$, $t = -2.07$, $p < 0.05$). In the second step, the communication practices variable was entered into the regression equation. The communication practices variable was significant ($\beta = 0.69$, $t = 6.12$, $p < 0.001$) and accounted for an additional 41.5 per cent of the variance in communication satisfaction. Thus communication practices are positively related to communication

satisfaction. *H1*, which proposed that paramedics' appraisal of their organization's internal communication practices would be significantly and positively related to communication satisfaction, was therefore supported. The results suggest that paramedics who appraised communication practices more positively in their jobs were more likely to display stronger levels of communication satisfaction.

Predictors related to job satisfaction. Linear regression analysis was performed to test the hypothesis that paramedic's appraisal of their organization's internal communication systems will be significantly and positively related to job satisfaction (*H2a*). The results of this analysis are presented in Table II. The control variables (age, gender, education, marital status, number of children, organizational tenure, shift duration and shift pattern) were entered in the first step. The control variables accounted for 28.4 per cent of the variance in the job satisfaction variable. The regression coefficients for organizational tenure ($\beta = -0.31$, $t = -2.61$, $p < 0.05$) and shift pattern ($\beta = 0.43$, $t = 3.41$, $p < 0.01$) were significant. In the second step, the communication practices variable was entered into the regression equation. The communication practices variable was significant ($\beta = 0.47$, $t = 4.32$, $p < 0.001$) and accounted for an additional 19.8 per cent of the variance in job satisfaction. Thus communication practices are positively related to job satisfaction. *H2a*, which proposed that paramedics' appraisal of their organization's internal communication practices would be significantly and positively related to job satisfaction, was therefore supported. The results suggest that paramedics with positive perceptions of their organization's communication practices were more likely to experience higher levels of satisfaction in their jobs.

Testing for mediation effect of communication satisfaction on job satisfaction. Two series of linear regressions were performed to test the hypothesis that communication satisfaction will mediate the relationship between paramedics' perception of their internal communication systems and their level of job satisfaction (*H2b*). The results of these analyses are presented in Table II. In the first model, job satisfaction was regressed on communication satisfaction in order to demonstrate that the mediating variable is related to the dependent variable. The control variables (age, gender, education, marital status, number of children, organizational tenure, shift duration and shift pattern) entered in the first step of this model accounted for 20.8 per cent of the variance in the job satisfaction variable. The regression coefficients for organizational tenure ($\beta = -0.29$, $t = -2.69$, $p < 0.01$) and shift pattern ($\beta = 0.35$, $t = 3.08$, $p < 0.01$) were significant. The communication satisfaction variable was then entered into the regression equation. The communication satisfaction variable was significant ($\beta = 0.66$, $t = 7.60$, $p < 0.001$) and accounted for an additional 37 per cent of the variance in job satisfaction. Thus the mediating variable of communication satisfaction is positively related to job satisfaction. In the second model, job satisfaction was regressed on communication satisfaction and communication practices in order to determine whether the relationship between communication practices and job satisfaction is non-significant (full mediation) or is significantly reduced (partial mediation) when the effect of communication satisfaction on job satisfaction is statistically controlled. The control variables (age, gender, education, marital status, number of children, organizational tenure, shift duration and shift pattern) were entered in the first step and accounted for 27.8 per cent of the variance in the job satisfaction variable. The regression coefficients for organizational tenure

($\beta = -0.27$, $t = -2.08$, $p < 0.05$) and shift pattern ($\beta = 0.46$, $t = 3.43$, $p < 0.01$) were significant. The communication satisfaction variable was entered into the regression equation and was significant ($\beta = 0.62$, $t = 6.05$, $p < 0.001$), accounting for an additional 33.2 per cent of the variance in job satisfaction. When the variable communication practices was entered in the next step, it failed to explain any additional variance and the beta was insignificant thus indicting full mediation. *H2b*, which proposed that communication satisfaction would mediate the relationship between paramedics' perception of their internal communication systems and their level of job satisfaction, was therefore supported.

Predictors related to affective organizational commitment (AOC). Linear regression analysis was performed to test the hypothesis that paramedic's appraisal of their organization's internal communication systems will be significantly and positively related to AOC (*H3a*). The results of this analysis are presented in Table II. The control variables (age, gender, education, marital status, number of children, organizational tenure, shift duration and shift pattern) were entered in the first step. The control variables accounted for 7.5 per cent of the variance in the AOC variable. Organizational tenure was the only variable with a significant regression coefficient ($\beta = -0.28$, $t = -2.08$, $p < 0.05$). In the second step, the communication practices variable was entered into the regression equation. The communication practices variable was significant ($\beta = 0.37$, $t = 2.84$, $p < 0.01$) and accounted for an additional 12.4 per cent of the variance in job satisfaction. Thus communication practices are positively related to AOC. *H3a*, which proposed that paramedics' appraisal of their organization's internal communication practices would be significantly and positively related to AOC, was therefore supported. The results suggest that paramedics with positive perceptions of their organization's communication practices were more likely to experience higher levels of affective organizational commitment.

Testing for mediation effect of communication satisfaction on affective organizational commitment. Two series of linear regressions were performed to test the hypothesis that communication satisfaction will mediate the relationship between paramedics' perception of their internal communication systems and their level of AOC (*H3b*). The results of these analyses are presented in Table II. In the first model, AOC was regressed on communication satisfaction in order to demonstrate that the mediating variable is related to the dependent variable. The control variables (age, gender, education, marital status, number of children, organizational tenure, shift duration and shift pattern) entered in the first step of this model accounted for 15.9 per cent of the variance in the AOC variable. The regression coefficients for organizational tenure ($\beta = -0.32$, $t = -2.88$, $p < 0.01$) and shift pattern ($\beta = 0.23$, $t = 2.13$, $p < 0.05$) were significant. The communication satisfaction variable was then entered into the regression equation. The communication satisfaction variable was significant ($\beta = 0.53$, $t = 5.15$, $p < 0.001$) and accounted for an additional 23.4 per cent of the variance in AOC. Thus the mediating variable of communication satisfaction is positively related to AOC. In the second model, AOC was regressed on communication satisfaction and communication practices in order to determine whether the relationship between communication practices and AOC is non-significant (full mediation) or is significantly reduced (partial mediation) when the effect of communication satisfaction on AOC is statistically controlled. The control variables (age, gender, education, marital status, number of children, organizational tenure, shift

duration and shift pattern) were entered in the first step and accounted for no variance in the AOC variable. None of the regression coefficients proved to be significant. The communication satisfaction variable was then entered into the regression equation and was significant ($\beta = 0.59$, $t = 4.84$, $p < 0.001$), accounting for 34.2 per cent of the variance in AOC. When the variable communication practices was entered in the next step, it failed to explain any additional variance and the beta was insignificant, thus indicting full mediation. *H3b*, which proposed that communication satisfaction would mediate the relationship between paramedics' perception of their internal communication systems and their level of AOC, was therefore supported.

Discussion

The purpose of this study was to determine if communication satisfaction mediates the relationship between internal communication practices and two important job outcomes: job satisfaction and affective organizational commitment. Consistent with existing research, we identified significant and positive relationships between internal communication practices and communication satisfaction (Hargie *et al.*, 2002), communication satisfaction and job satisfaction (Pincus, 1986; Muchinsky, 1977), and communication satisfaction and affective organizational commitment (Ng *et al.*, 2006; Varona, 1996). Our most important finding is that internal communication practices affect job satisfaction and affective organizational commitment only if they foster communication satisfaction amongst employees. This suggests that communication satisfaction fully mediates the relationship between:

- communication practices and job satisfaction; and
- communication practices and affective organizational commitment.

We believe this is the first time that such a link has been reported in the academic literature. This finding is significant for several reasons. First, it has a fundamental practical implication for managers: internal communication systems that fail to generate communication satisfaction amongst employees will not foster job satisfaction or affective organizational commitment regardless of the quantity of the information that is transmitted. Thus, managers must provide employees with timely and highly valued information. This demands that managers develop a clear understanding of which communication practices are most valued by employees, as well as the quantity and quality of information these individuals require to perform their jobs well. Only then can managers design and implement an effective and efficient internal communication system capable of meeting employees' communication needs and wants. Second, the finding that communication satisfaction mediates the effects of communication practices on multiple job outcomes suggests the possibility that communication satisfaction may be a fundamental "yardstick" against which employees appraise all of an organization's operating activities and change initiatives. This contemplation is further supported with evidence from the change management literature which shows that employee attitudes and the outcomes of organizational change initiatives depend, at least in part, on effective internal communication practices (Proctor and Doukakis, 2003; Kitchen and Daly, 2002). Third, from a careers perspective, the study is important because it can help employers to find ways to keep paramedics on the job. In order not to exacerbate the current shortage of paramedical personnel, the results show that

implementing effective and efficient communication practices can enhance job satisfaction and organizational commitment, thereby significantly reducing frustration with the organization and possibly enhancing career satisfaction.

There are four limitations to this study that we wish to address. First, the methodology employed to test for mediation required that we make important assumptions about the direction of the relationships between the variables under study. While the data support this hypothesis, more research will be needed to confirm a causal relationship. Second, our study was centered in a public sector organization operating within the healthcare industry. Additional research is necessary to determine if the relationships identified generalize to other types of organizations operating in other industries. Third, the study population represented a fairly homogeneous group of individuals in terms of both cultural and ethnic diversity. Additional research is needed to determine if the findings herein can be generalized across cultural and racial boundaries. Finally, the sample size for this study was relatively small ($n = 91$); future, large-scale research will be instrumental in determining whether these findings can be replicated.

To conclude, this research has solely examined the relationship of communication satisfaction to job satisfaction, on the one hand, and organizational commitment, on the other. Following Pettit *et al.* (1997), who called for further research in the field, future research should aim to theoretically and empirically explore the relationships between communication satisfaction and other key organizational outcomes such as job involvement and turnover intent.

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