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Impacts of School Communication on Job Satisfaction in Australian Primary Schools: A Structural Equation Model

John De Nobile[1] and Ayse Aysin Bilgin[2]*

[1] School of Education, Faculty of Arts, Macquarie University, Sydney, NSW, Australia, [2] School of Mathematical and Physical Science, Faculty of Science and Engineering, Macquarie University, Sydney, NSW, Australia

While there has been research into the ways some aspects of organizational communication may influence job satisfaction, it has not been comprehensive, and very little work has been conducted in schools. This study investigates the influences of a comprehensive range of aspects of organizational communication on job satisfaction of school staff. Participants in the study were 1,575 staff members from schools across Australia. A questionnaire survey was the primary instrument. Data were analyzed using exploratory and confirmatory factor analyses to validate constructs and multiple regression analyses, followed by structural equation modeling, to investigate effects. A 10 factor model of aspects of organizational communication and six-factor model of job satisfaction dimensions were identified and validated. Multiple regression analyses revealed that all 10 aspects of organizational communication have associations with job satisfaction. However, structural equation modeling revealed five aspects of organizational communication, to do with openness, support-giving, principal direction, and participation in decision making to have the most important effects on job satisfaction. This study contributes to our knowledge of communication by confirming a 10-factor model of organizational communication that can be used in other research. Implications for practice include the need for school leadership to foster open communication and facilitate school climates that encourage supportiveness, democracy, and collegial direction.

Keywords: organizational communication, job satisfaction, primary schools, factor analysis, structural equation model

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****Correspondence:***
John De Nobile
john.denobile@mq.edu.au

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INTRODUCTION

Job satisfaction is one of a number of job attitudes indicative of staff member morale and wellbeing (Evans, 1998; Shine, 2015; Collie et al., 2016) and linked to withdrawal behaviors such as absence and turnover (Lester, 1988; Crossman and Harris, 2006; Millburn, 2011; Arnup and Bowles, 2016; Muchinsky and Howes, 2019). Issues such as low morale and withdrawal can eventually impact student outcomes (Price and McCallum, 2015) and be costly to schools (Aspland, 2016; Sorensen and Ladd, 2020). Recent research has suggested that aspects of organizational communication might influence job satisfaction (De Nobile, 2017). Many aspects of organizational communication involve interactions between school leadership and staff.

Some of these, such as support giving and participation in decision making, have received considerable attention in research conducted in schools, but others, such as cultural communication and openness, have not even though some evidence exists that these might influence job satisfaction (De Nobile, 2017). Improved knowledge of how various types of communication may be used to influence job attitudes such as satisfaction would be of great value to school administrators wishing to optimize school performance and improve student outcomes.

The focus of this report is on the results of a large national study of Australian primary schools. The study is part of a larger research agenda investigating the potentials for organizational communication to influence or mediate job attitudes such as job satisfaction in ways that promote staff member morale, wellbeing, and school effectiveness. The study reported here builds on previous research by examining the relationships between aspects of organizational communication and dimensions of job satisfaction using a wider sampling and more rigorous analyses to ascertain the most important communication variables for staff member job satisfaction.

Job Satisfaction

The concept of job satisfaction has been studied from many perspectives and, as a result, several definitions exist (Spector, 2012). However, there is enough commonality among them to assert that job satisfaction generally refers to an extent to which individuals feel satisfied with various aspects of their work, their job overall, or both (Hoy and Miskel, 2013; Muchinsky and Howes, 2019; Skaalvik, 2020). As this definition suggests, job satisfaction can be examined from the point of view of dimensions of work, such as support from leadership, recognition, and collegial relationships (Lester, 1988; Landy and Conte, 2013; Lester et al., 2014), and can also be examined as an overall, global attitude (Wanous et al., 1997; Judge et al., 2017). While there can be a temptation to assume that overall job satisfaction is the 'sum' satisfaction from the various dimensions of work (Landy and Conte, 2013), scholars in the field advise that overall and dimensions of job satisfaction are related but separate constructs and should be examined separately (Spector, 2012; Muchinsky and Howes, 2019).

Common among conceptualizations of job satisfaction is recognition that it derives from a comparison by individuals between an ideal that is needed or desired and the reality of what the workplace provides (Rafferty and Griffin, 2009; Luthans, 2011; Judge et al., 2017). Put simply, if dimensions of work meet the needs, expectations, or desires of individuals' then satisfaction, or at the very least a lack of dissatisfaction, will be the likely result. On the other hand, the absence of certain work dimensions or poor quality dimensions can lead to low job satisfaction or job dissatisfaction (Luthans, 2011; Spector, 2012; Muchinsky and Howes, 2019).

Given the variety of theories purporting to explain job satisfaction (Evans, 1998), researchers of the phenomenon face the dilemma of which theory to use to scaffold any investigation. It appears that the best solution is to apply the theory (or theories) that best suit the context and the sample (Arnolds and Boshoff, 2002; Astrauskaite et al., 2011). Despite some criticism relating to research design dependency and an apparent rigidity in the categorization of job dimensions (De Nobile and McCormick, 2007) the two-factor theory developed by Herzberg et al. (1959) has been widely used as a basis for research in a variety of settings (Bassett-Jones and Lloyd, 2005; Judge et al., 2017). The two-factor theory is described in more detail elsewhere (for example, Herzberg et al., 1959; De Nobile and McCormick, 2007; Luthans, 2011). However, it bears describing briefly as background here.

Building on Maslow's needs hierarchy, the two-factor theory proposes a set of job dimensions termed 'motivators' that, when present, provide job satisfaction and motivate staff members because they fulfill higher order human needs such as self-actualization and achievement. These include: recognition from supervisors and others, responsibility for one's own work, and interest arising from the nature of the work. The theory posited another set of job dimensions termed 'hygiene factors.' These are aspects of work that, when absent or considered inadequate, can lead to dissatisfaction and reduced motivation, but when adequate do not necessarily lead to job satisfaction and include: the nature of supervision, relations with colleagues, policy and work conditions as they relate to lower order needs (for complete lists of motivators and hygiene factors see Herzberg et al., 1959; Luthans, 2011).

Two-factor theory has been used widely to investigate teacher job satisfaction (Derlin and Schneider, 1994; Dinham and Scott, 2000; De Nobile and McCormick, 2007; Menon and Athanasoula-Reppa, 2011; Lester et al., 2014). Many studies have addressed the problems of methodology and category rigidity by using research designs different to those of Herzberg and by taking a more exploratory approach to job dimensions rather than looking strictly for hygienes and motivators (Evans, 1998; Judge et al., 2017). Indeed, Derlin and Schneider (1994, p. 65) advocated an open mind with regard to factors that lead to job satisfaction, advising that "the theory is open to broad interpretation and application." In their large studies of teachers from Australia and New Zealand Dinham and Scott (2000) identified three domains of job satisfaction which confirmed the Herzberg theory to some extent but also offered an alternative conceptualization of the job dimensions responsible for job satisfaction. Regardless of the results of these previous studies, the importance of Herzberg's theory lies in the possibility of a range of job dimensions that can be investigated in relation to the job satisfaction of school staff.

Job satisfaction is an important job attitude for educational leaders to consider because of its established links to behaviors that can be positive for schools, such as increased commitment to work and better effort, as well as those that can be costly to schools such as low performance, and withdrawal behaviors such as absenteeism and turnover (Arnolds and Boshoff, 2002; Luthans, 2011; Skaalvik and Skaalvik, 2011; Judge et al., 2017; Muchinsky and Howes, 2019). Job satisfaction has been associated with impeded performance directly and indirectly. Studies by Arifin (2015) and Banerjee et al. (2017) have identified direct links between high job satisfaction and better teacher performance. In several studies, such links are inferred via student outcomes (Pont et al., 2008; Dutta and Sahney, 2016).

The impact of job satisfaction on teacher performance might be compounded by withdrawal behaviors: absenteeism and turnover (Judge et al., 2017), as both are sure to result in learning interruptions for students. While the associations between teacher job satisfaction and absenteeism have been shown to be weak in some studies (Scott and Wimbush, 1991) stronger relationships were found in others (Ejere, 2010). The links with turnover are less ambiguous. Several studies have reported direct links between job dissatisfaction and intention to leave (Shine, 2015; Arnup and Bowles, 2016; Judge et al., 2017). Such associations have been reported in other studies as being mediated by work engagement, job commitment, and support from colleagues and the principal (Ingersoll, 2001; Klassen et al., 2012).

Organizational Communication

Organizational communication has also been the focus of considerable empirical study, but the overwhelming majority of the research has been focused on business and the corporate sector (Dwyer, 2020). Very little research has taken place in the context of schools. Given this, the epistemology and conceptualizations of organizational communication have a basis in non-school contexts, though studies conducted in school settings, such as the one reported here, could potentially change this situation.

Definitions of organizational communication abound, but the common elements among them can easily be identified and synthesized. As a result, organizational communication is operationally defined as the sharing of information among people and the processes that are involved in those interactions (Eisenberg et al., 2007; Dwyer, 2009; Miller, 2015). Those interactions occur vertically (upward and downward) between leaders and followers, or managers and staff, and horizontally, among people at the same hierarchical level, and can range in their level of formality from organized meetings to impromptu conversations (Walker, 2015; Dwyer, 2020).

Organizational communication has been conceptualized as having functional utility, meaning that interactions do not always happen by coincidence, but usually serve some purpose for the organization or people within it (Shockley-Zalabak, 2012). Several function categories have been proposed over the last five or six decades (Farace et al., 1977; Goldhaber, 1993; Arlestig, 2007). A recent schema of communication functions, based on a large body of literature including those listed above has had the benefit of being tested in school contexts. De Nobile's (2016) 10C model identified four functions of organizational communication: directive, cultural, supportive, and democratic. Directive communication comprises interactions that result in staff member compliance, ranging from giving task information to explicit persuasion. Cultural communication refers to interactions that maintain or change organizational culture, ranging from induction and mentoring new staff through to the telling of stories from the past and discussions about school mission. Supportive communication involves interactions that influence morale, such as encouragement and recognition. In line with previous research conducted by the authors (De Nobile and McCormick, 2008; De Nobile, 2017; De Nobile, 2020) supportive communication was conceptualized in terms of direction of flow: downward from principals to staff, upward from staff to principals, and horizontal among staff. Democratic communication refers to communication involved in participation in decision making, including the work of teams and leaders seeking input from staff.

Organizational communication has also been conceptualized in relation to its qualities. The 10C model refers to these as "features" and includes degrees of openness and information load (De Nobile, 2016). Openness is a well-known concept referring to the degree of honesty and freedom of expression that exists in an organization and relates closely to organizational climate (Arlestig, 2007; Liu et al., 2021). As honesty and freedom of expression are also manifestations of trust among people, trust was conceptualized as a component of openness (De Nobile, 2014). Information load refers to the volume and complexity of interactions as perceived by organizational members and includes overload (information that is too voluminous or complex), underload (not enough information to get work done), and adequacy (enough information at the right time). Information load is also a well-known concept (Farace et al., 1977; Scott et al., 1999), but it has not been the focus of much research attention in the 2000s.

These functions and features of communication may be experienced as vertical or horizontal interactions through a variety of media. Several of them have been the focus of research attention in relation to job attitudes, including job satisfaction. However, much of the research to date has focused on one or two aspects of communication. For example, some studies have examined the relationship between supportive communication and job satisfaction (Gaertner, 2000; Kinman et al., 2011), while others have attempted to link as many as three aspects of communication to job satisfaction (Trombetta and Rogers, 1988). Empirical research investigating relationships of a wide range of organizational communication variables with job satisfaction are, at present scarce.

Links Between Organizational Communication and Job Satisfaction

Given the focus of the study reported here, a review of associations between aspects of organizational communication and job satisfaction identified in the literature is appropriate. This review will concentrate first on the four functions of communication described earlier (directive, cultural, supportive, and democratic), and then on features of communication (openness and load). These concepts together represent a comprehensive framework of aspects of organizational communication through which job satisfaction can be examined.

Directive communication, largely a downward flow of information between school leadership, such as the principal, and other staff, serves to provide staff members with information about how to perform tasks and with guidance (De Nobile, 2015). There is not a lot of research on this relationship, but given the importance of professional autonomy to teachers (Lester, 1988; Evans, 1998; Pearson and Moomaw, 2005), one might expect increased direction from principals might impact negatively

on staff satisfaction. The scant literature available suggests a negative relationship between directive communication and job satisfaction if the principal direction is perceived to be excessive (Kruglanski et al., 2007; Yun et al., 2007). A study of secondary schools reported how 'aversive leadership,' where the principal uses overt persuasion to gain teacher compliance, was related to lower job satisfaction of teachers (Bligh et al., 2007). That type of principal behavior appears congruent with the 'command and control' form of directive communication identified by De Nobile (2015) who also reported evidence of negative affect on teachers in relation to that type of communication.

Associations between job satisfaction and cultural communication are largely implied. This is because while cultural communication has been identified as a concept for well over 30 years (Carbaugh, 1985), there has been very little direct research involving this aspect of communication. There is literature that suggests the mentoring aspect of cultural communication may be linked to higher job satisfaction (Cawyer and Friedrich, 1998), but other studies suggest this might not be the case if the nature of the mentoring relationship is not healthy (Long, 1997). A recent study conducted in Australian schools identified significant associations between cultural communication and job satisfaction relating to leadership and working conditions (De Nobile, 2017). Those findings alongside the logic that school staff will likely be more satisfied with a work environment they understand and relate to Reyes and Pounder (1993), Howe (2006), De Nobile (2021) suggest a positive relationship between cultural communication and job satisfaction.

In contrast, there is abundant evidence of positive associations between job satisfaction and supportive communication (Dinham and Scott, 2000; Gaertner, 2000; You and Conley, 2015; Aldridge and Fraser, 2016; Skaalvik, 2020). Again, much of the research has not investigated 'supportive communication' as it is conceptualized here, but specific behaviors compatible with it such as social support from colleagues, principal affirmation and recognition, and administrative support have been. Supportive communication from principals has been associated with higher teacher job satisfaction in a number of Australian studies in primary and secondary schools (Dinham and Scott, 2000; De Nobile and McCormick, 2008; Aldridge and Fraser, 2016). Supportive communication from co-workers has also been linked to increased job satisfaction in several studies conducted in primary and secondary schools (You and Conley, 2015; Msuya, 2016).

Democratic communication has not been widely studied as a concept, but associations with higher job satisfaction have been reported in relation to participation in decision making (Hulpia et al., 2009) and teamwork (Somech, 2010; Skaalvik and Skaalvik, 2011). In their study of primary schools, Sarafidou and Chatziioannidis (2013) reported that participation in decision making relating to teaching matters was the strongest predictor of teacher job satisfaction. A more recent study found that, while participation in decision making did predict teacher job satisfaction, other communication variables such as openness and adequacy moderated this relationship (Xia et al., 2016). This is noteworthy as it suggests that aspects of organizational communication may work in tandem to influence job attitudes. While asserting that teachers linked teamwork oriented to school decision making to job satisfaction, however, Skaalvik and Skaalvik (2011) also reported that some teachers identified it as a source of stress due to personality dynamics and conflict. This suggests that democratic communication may have some limitations as a predictor of job satisfaction. That study notwithstanding, the limited previous study suggests a positive association with job satisfaction.

There is a small stream of empirical study suggesting openness as a predictor of job satisfaction (Jablin, 1979; Trombetta and Rogers, 1988; Xia et al., 2016). Trust is an important factor associated with openness, with some scholars including it as an indicator of openness (Hoy and Miskel, 2013) and others listing openness as an indicator of high trust (Van Maele and Van Houtte, 2015). Clearly, they are interrelated, but we have conceptualized openness as a salient feature of communication (Jablin, 1979; Trombetta and Rogers, 1988) with trust as a component (De Nobile, 2014). A more recent study of primary and secondary school teachers revealed higher principal openness to be associated with higher teacher job satisfaction and, importantly, lower turnover intention (Endacott et al., 2016). Given the positive connotations associated with openness, it would be expected to have a positive relationship with job satisfaction.

Communication load is itself multidimensional because of the range of experiences from overload, through adequacy to underload (De Nobile, 2016). Nevertheless, the potential relationships with job satisfaction are clear when they are examined separately. It would be logical to assume that adequacy would be more likely associated with job satisfaction than the others, and the research evidence suggests this might be so (Trombetta and Rogers, 1988; Scott et al., 1999). Overload and underload have both been associated with reduced job satisfaction (Pettit et al., 1997; Cho et al., 2011). However, exploration of these relationships in school contexts is scant. Given the potential for frustration caused by having to deal with too much information or not having enough to do one's work, it would be logical to hypothesize a negative relationship with job satisfaction. By this logic, we assert that having adequate information is likely to be positively associated with job satisfaction.

Clearly, there is evidence from previous research that aspects of communication may have an impact on job satisfaction. What is not clear is which aspects are more important and which are less so, or have any impact at all, when accounting for all possibilities. Quality of communication has been identified as a key element in successful schools (Arlestig, 2008), and a combined association with job satisfaction has been noted (Somech, 2010). Given the potential influences of job satisfaction on school effectiveness discussed earlier, an awareness of the most important aspects of organizational communication to consider when maintaining standards or improving school outcomes would be of value to school leaders and system administrators.

Focus on Primary Schools

In Australia, primary school is equivalent in level to elementary school in some other countries. While one might argue for the expediency in situating research about communication and job satisfaction in all levels of schooling, differences in structure between primary and secondary (high) schools exist that would add unnecessary complexity (Gay et al., 2009). Primary schools differ from secondary schools in terms of hierarchical structure (Bacharach et al., 1986), with primary (elementary) schools often described as flatter than secondary (Hoy and Sweetland, 2001). It follows that communication, especially that involving leadership, is experienced differently in primary schools, where staff members have more direct interactions with and access to the principal, as well as one another.

Research Framework

The purpose of the current study was to identify the way in which aspects of organizational communication influence job satisfaction in primary school staff, building on earlier work (De Nobile and McCormick, 2008). The research question guiding the study was: What relationships exist between organizational communication and job satisfaction and which aspects of organizational communication have the most influence on dimensions of job satisfaction of primary school staff?

In congruence with the results of the literature review, eight aspects of organizational communication, and six dimensions of job satisfaction, were the hypothesized variables. Those for organizational communication were derived from the 10C model (De Nobile, 2016) as well as earlier work (De Nobile and McCormick, 2008). The hypothesized variables included those identified as functions of communication (directive, cultural, supportive, and democratic) and those identified as features of communication (openness, adequacy, overload, and underload). Those for job satisfaction reflected work-related dimensions identified by Lester and included: supervision, recognition, colleagues, work itself, responsibility, and working conditions (Lester et al., 2014). Dimensions not relating directly to work activity, such as pay, advancement, and security, were excluded from this study. The theorized relationships are shown in **Figure 1**.

Based on the literature and the resultant model, eight hypotheses were used to guide the study.

H1: Directive communication will be negatively associated with job satisfaction dimensions.

H2: Cultural communication will be positively associated with job satisfaction dimensions.

H3: Supportive communication will be positively associated with job satisfaction dimensions.

H4: Democratic communication will be positively associated with job satisfaction dimensions.

H5: Open communication will be positively associated with job satisfaction dimensions.

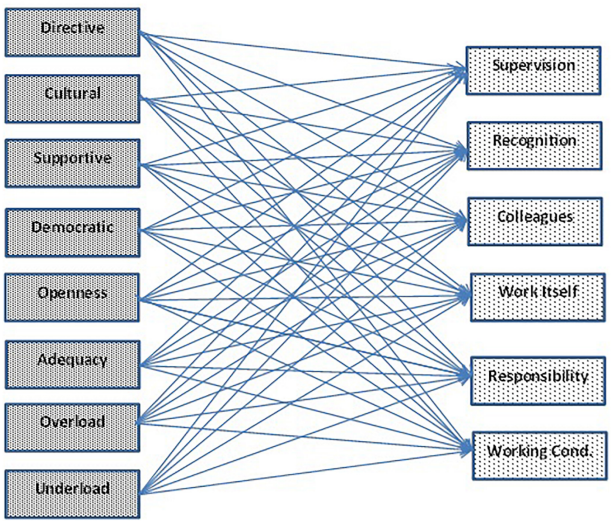

FIGURE 1 | The hypothesized relationships between organizational communication and job satisfaction.

H6: Adequacy of communication will be positively associated with job satisfaction dimensions.

H7: Overload of communication will be negatively associated with job satisfaction dimensions.

H8: Underload of communication will be negatively associated with job satisfaction dimensions.

MATERIALS AND METHODS

A quantitative survey-based design was employed incorporating exploratory and confirmatory factor analyses to identify important variables and confirm constructs, as well as multiple regression analyses and structural equation modeling to explore relationships. Data was sourced from a national study of the relationships between organizational communication and job attitudes.

Sample

Government and non-government schools in all states and territories of Australia were randomly selected to participate in the study in numbers equivalent to their proportion as a sector (government schools = 70%, non-government schools = 30%). Stratified sampling was employed to ensure participants were also representative of the proportions of staff employed in each sector (Gay et al., 2009). Of the 4082 surveys distributed, 1684 completed surveys were returned (41%). Some 109 surveys were discarded because of missing data or improper responses, leaving a total of 1575 useable surveys and a final response rate of 39%.

The sample was a reasonable representation of the population (see **Table 1**). The ratio of male to female staff members was

TABLE 1 | Description of the sample.

Demographics		*n*	%
Sex	Male	208	13.2
	Female	1351	85.8
	Unstated	16	1.0
Age	20–30	288	18.3
	31–40	374	23.7
	41–50	429	27.2
	51+	470	29.8
	Unstated	14	0.9
Experience (years)	0–5	463	29.4
	6–10	305	19.4
	11–15	204	13.0
	16+	588	37.3
	Unstated	15	1.0
Position	Teacher	1024	65.0
	Executive	200	12.7
	Teacher's aide	168	10.7
	Other	170	10.8

similar to that for the general population of primary school staff where 19% were male and 81% were female (Australian Bureau of Statistics, 2020). It was not possible to obtain other staffing demographics from all educational systems, but those that have been compared have been found to be similar to the sample, especially in relation to the proportion of non-teaching staff and years of experience represented in the sample (for example, Australian Bureau of Statistics, 2020).

Instruments

The survey comprised items requesting demographic information (sex, age, years of experience, and current position), the Organizational Communication in Primary Schools Questionnaire (OCPSQ), and the Teacher Job Satisfaction Questionnaire (TJSQ). The OCPSQ was developed through earlier studies (De Nobile and McCormick, 2008; De Nobile et al., 2013) and comprised 66 items describing aspects of organizational communication. Vertical and horizontal communication flows were accounted for by items that reflected these forms of communication where appropriate for each aspect. For example, there were items concerning horizontal supportive communication as well as downward and upward supportive communication. The same was the case for other aspects such as openness and load, but directive communication items referred only to downward interactions from principals. For a detailed report on the development and validation of the OCPSQ refer to De Nobile (2014, 2020), which reported Cronbach alpha reliabilities for scales representing aspects of communication ranging from 0.72 to 0.91. Respondents were asked to rate the extent to which they agreed with each as a statement about communication in their school on a scale of 1 (strongly disagree) to 5 (Strongly agree).

The TJSQ was developed by Lester, based on Herzberg's two-factor theory (Lester et al., 2014). It was chosen for its suitability to teachers and other school staff (such as teachers-aides and clerical staff) and its wide application in schools in the United States and other countries (Lester et al., 2014). Excellent reliabilities have been obtained from resultant dimension scales ranging from 0.71 to 0.93 (Lester et al., 2014). Ghavifekr and Pillai (2016) reported a high overall reliability (Cronbach alpha = 0.89). The original TJSQ comprised 77 items relating to nine job dimensions (supervision, colleagues, working conditions, pay, work itself, responsibility, advancement, recognition, and security). For this study, only six of these dimensions (listed earlier) were relevant as the focus was on work done in schools. This meant that only 51 items were used from the TJSQ. Each item described a source of job satisfaction relating to a dimension and respondents were required to rate the extent to which they agreed on a scale from 1 (strongly disagree) to 5 (strongly agree).

Analyses

Exploratory factor analysis (EFA) was used as an initial data reduction technique to identify salient aspects of organizational communication and dimensions of job satisfaction. The use of EFA was particularly required for the OCPSQ because it had been modified subsequent to the results of earlier studies (De Nobile, 2014) and the TJSQ because of the omitted items. However, given the fact that both instruments were used previously, a confirmatory factor analysis (CFA) was employed for its more rigorous estimation processes (Byrne, 2016) and its facility to test how well the theorized factors 'fit' the data (Hair et al., 2019). Multiple regression was employed to establish initial relationships between the variables, based on the results of the EFA. Structural equation modeling (SEM) was employed subsequent to CFA to confirm as well as to clarify the relationships between communication and job satisfaction (Byrne, 2016).

RESULTS AND DISCUSSION

Data from the OCPSQ were entered into an SPSS Version 19 database and cases checked for missing data and other inconsistencies. Once missing data issues were rectified exploratory factor analyses and multiple regression analyses commenced. Confirmatory factor analyses and SEM was conducted using AMOS Version 21.

Exploratory Factor Analyses

Items of the OCPSQ were submitted to a principal axis factoring procedure. Maximum likelihood extraction was chosen to optimize estimation of factor loadings given the large sample, and oblimin rotation was used because the high likelihood of inter-correlation between factors required a non-orthogonal method (Hair et al., 2019). Examination of the results using scree plot and the Kaiser criterion of eigenvalues greater than 1.00 led to an interpretable 10-factor solution. The solution, presented in **Table 2**, accounted for just over 60% of the variance. The high Kaiser–Meyer–Okin (KMO) statistic (0.97) suggested a 'marvelous' result in relation to the data (Hutcheson and Sofroniou, 1999). Reliabilities for the factors as scales measuring communication constructs ranged from 0.73 to 0.92 (Cronbach

TABLE 2 | Factor solution for the OCPSQ.

Factor name	Number of items	Eigenvalue	Reliability (alpha)
Vertical openness	9	32.83	0.92
Horizontal supportive	9	8.08	0.86
Access	5	3.71	0.82
Overload	7	3.22	0.78
Directive	5	2.46	0.73
Downward supportive	4	2.32	0.87
Upward supportive	3	2.20	0.76
Democratic	7	2.00	0.89
Cultural	6	1.75	0.79
Adequacy	7	1.62	0.82

Adapted from De Nobile (2020, p. 14).

α). Four items were removed due to low communalities and poor conceptual fit.

Vertical openness comprised items that were about how openly and honestly principals interact with staff and their propensity to accept candid comments or bad news. *Horizontal supportive* concerned the sharing of moral and other support among staff members. *Access* comprised items primarily about opportunities to interact with the principal regarding work issues, but also personal issues. *Overload* referred to perceived information overload from the principal and other staff. *Directive* referred to information about work and other forms of direction coming from the principal. *Downward supportive* concerned the ways principals gave support to staff members. *Upward supportive* referred to ways staff members offered support to their principals. *Democratic* concerned various aspects of participation in decision-making such as the principal asking for input and teamwork aimed at influencing policy. *Cultural* concerned ways in which new staff members are inducted into the school culture and how school mission and culture was shared among staff. *Adequacy* referred to staff receiving enough information about what is going on in the school and to do their jobs as well as opportunities to interact with one another. *Access* was an unanticipated factor that made sense alongside the others as a feature of communication.

The 10-factor solution was close to the theorized aspects, with similar factors emerging compared to earlier research (De Nobile, 2017), but underload did not emerge. Items representing this construct were loaded negatively on to *Adequacy* and positively on to *Overload* and those items made sense in the context of their factors. For example, the item "I find it hard to get the information I need to do my job" made sense as part of Overload because too much information can lead to such a situation (Scott et al., 1999). Direction of flow was reflected somewhat in the openness factor and exactly in relation to the supportive communication factors.

Items from the TJSQ were submitted to the principal axis factoring procedure with varimax rotation as recommended by Lester et al. (2014). Using the same criteria for extraction as for the OCPSQ, an eight-factor solution was produced. The KMO statistic of 0.95 was again suggestive of a 'marvelous' result in relation to the data (Hutcheson and Sofroniou, 1999). The eight factors explained 55% of the variance. Reliabilities for the factors as measures of job satisfaction ranged from 0.51 to 0.90. The low reliabilities accorded two of the factors were attributed to low number of items relative to other identified factors (Hair et al., 2019). Three items were omitted due to low communalities.

JS Leadership comprised items related to satisfaction from the way principals treat staff members in regards to professional respect and supervisory style. *JS Colleagues* referred to satisfaction gained from working with colleagues. *JS Teaching* concerned satisfaction derived from aspects of the work such as using a variety of skills and working with students. *JS Recognition* concerned satisfaction from praise and other forms of recognition from the principal and from colleagues. *JS Feedback* referred to satisfaction gained primarily from feedback from the principal (three items) as well as peers (one item). *JS Working conditions* concerned satisfaction derived from physical site and working conditions in general. *JS Professional growth* comprised items to do with satisfaction from opportunities to try new things and avoiding routine work. *JS Policy* referred to satisfaction from school policies in general.

There were clear differences between these factors and the ones identified by Lester (Lester et al., 2014), and which were presented in the theorized model in **Figure 1**. However, such differences are typical in EFA procedures and can reflect the experiences of the given sample (Van Prooijen and Van der Kloot, 2001). More importantly, the factors were interpretable and made sense as dimensions of work that can provide satisfaction. The factor solution is presented in **Table 3**.

Multiple Regression Analyses

Multiple regression analyses were conducted to ascertain the predictive power of organizational communication aspects on dimensions of job satisfaction, and given the number of variables involved, such a procedure was deemed appropriate to guide the more sophisticated analyses (Hair et al., 2019). The stepwise procedure in SPSS was used to maximize explained variance and ensure that variables with less predictive power were still retained for examination (Hair et al., 2019). Although criticized for its reliability across samples, such a procedure does offer a fuller picture of the associations between organizational communication and job satisfaction than would be possible using other options available on SPSS (Hair et al., 2019). The results of the multiple regression analyses are presented in **Table 4**.

TABLE 3 | Factor solution for the TJSQ.

Factor name	Number of items	Eigenvalue	Reliability (alpha)
JS Leadership	10	27.57	0.87
JS Colleagues	9	7.31	0.80
JS Teaching	9	4.75	0.77
JS Recognition	6	3.91	0.90
JS Feedback	4	3.28	0.74
JS Working conditions	5	2.94	0.80
JS Professional growth	3	2.78	0.64
JS Policy	2	2.50	0.51

Inspection of the beta coefficients revealed the directionality of associations to be as predicted, except for *Directive* which had positive associations with job satisfaction instead of negative. This might reflect the fact that direction from the principal is needed (Arlestig, 2007) and perhaps not experienced as excessive by this sample. All 10 aspects of organizational communication predicted at least one, often more, dimensions of job satisfaction. However, the most powerful predictors were *Vertical openness*, *Horizontal supportive*, *Downward supportive*, *Overload,* and *Access*. The next most important aspects of organizational communication, accounting for more than 2% of variance after accounting for main predictors were *Democratic*, Cultural, *Directive,* and *Adequacy*. Only *Upward supportive* failed to explain substantial variance in any dimension of job satisfaction, although it did have minor predictive power for two dimensions.

TABLE 4 | Summary of regression analyses (dependent variable = job satisfaction dimensions).

Variables	R^2	R^2 change	*F*	*p*	*b*	β
JS Leadership						
Vertical openness	0.66	–	2712.40	<0.001	0.36	0.38
Overload	0.71	0.05	243.78	<0.001	−0.25	−0.24
Downward supportive	0.73	0.02	116.55	<0.001	0.17	0.20
Democratic	0.74	0.01	45.54	<0.001	0.15	0.15
Horizontal supportive	0.75	0.01	9.88	0.002	0.06	0.05
JS Colleagues						
Horizontal supportive	0.49	–	1310.45	<0.001	0.67	0.64
Overload	0.51	0.02	79.55	<0.001	−0.14	−0.17
Upward supportive	0.52	0.01	4.83	0.028	0.45	0.60
JS Teaching						
Horizontal supportive	0.11	–	173.03	<0.001	0.19	0.23
Democratic	0.16	0.05	81.97	<0.001	0.12	0.20
Overload	0.17	0.01	18.32	<0.001	−0.09	−0.14
Directive	0.18	0.01	7.26	0.007	0.06	0.09
JS Recognition						
Downward supportive	0.60	–	2109.69	<0.001	0.73	0.67
Adequacy	0.62	0.02	49.74	<0.001	0.08	0.06
Overload	0.63	0.01	22.63	<0.001	−0.14	−0.10
Horizontal supportive	0.64	0.01	14.94	<0.001	0.13	0.08
JS Feedback						
Downward supportive	0.34	–	716.20	<0.001	0.26	0.29
Directive	0.42	0.08	182.70	<0.001	0.29	0.24
Cultural	0.44	0.02	54.66	<0.001	0.14	0.13
Access	0.45	0.01	21.80	<0.001	0.13	0.14
Horizontal supportive	0.46	0.01	6.52	0.011	0.08	0.06
JS Working conditions						
Vertical openness	0.31	–	625.03	<0.001	0.12	0.13
Adequacy	0.36	0.05	122.20	<0.001	0.07	0.08
Overload	0.39	0.03	75.05	<0.001	−0.26	−0.24
Cultural	0.42	0.03	50.38	<0.001	0.12	0.11
Directive	0.43	0.01	15.94	<0.001	0.11	0.09
JS Professional growth						
Overload	0.15	–	242.01	<0.001	−0.27	−0.25
Democratic	0.19	0.04	74.53	<0.001	0.22	0.22
Horizontal supportive	0.21	0.02	44.68	<0.001	0.24	0.18
Upward supportive	0.22	0.01	4.71	0.030	0.06	0.07
JS Policy						
Access	0.05	–	74.98	<0.001	0.06	0.08
Cultural	0.07	0.02	28.33	<0.001	0.10	0.12
Overload	0.08	0.01	14.85	<0.001	−0.11	−0.12

The associations were understandable and explainable. For example, one might reasonably expect *Downward supportive* to be positively associated with *JS Recognition* and *JS Feedback* as supportive interactions can lead to a perception of having received some feedback and/or affirmation. That higher satisfaction from policy was associated with higher *Access* and vice versa, makes sense given the communication variable relates to being close to sources of information about policy. While the multiple regressions were used mainly to guide SEM models, and associations will be explained further in the relevant section, some noteworthy results are worth exploring here.

Organizational communication explained up to 75% of the variance in *JS Leadership*. The prominence of *Vertical openness* as a predictor makes sense in light of literature that places communication at the heart of leadership practice (Arlestig, 2008; Duignan, 2012; Walker, 2015), and which emphasizes the importance of honesty and trust, key concepts associated with open communication that contribute to positive school climates (Shockley-Zalabak, 2012; Hoy and Miskel, 2013). The association with *Overload*, indicating that higher load of communication is associated with lower satisfaction from leadership, and vice versa, suggests that communication load may be a mediator of felt job satisfaction. *Overload* accounted for variance in five other job satisfaction dimensions, making it hard to ignore as a potential negative influence on job satisfaction.

Vertical openness and *Adequacy*, both features of communication, appear to be important to satisfaction from work conditions. Adding potential effects of *Overload* explains nearly 40% of the variance in *JS Working conditions* and suggests that features of communication might be viewed by staff members as important to perceptions of the work environment. Of some interest was the association suggesting higher levels of *Overload* to be associated with lower *JS Professional growth*. This could come from a perception that too much volume of information or complexity may somehow impede innovation or encourage routine. Increased *Democratic* appears to have association in the opposite direction, suggesting that input into decisions and working in teams may be a key to professional growth that could mediate the potential effects of too much information. The statistics can of course not confirm these explanations and the association of *Democratic* as a lower power predictor of job satisfaction dimensions perhaps merits investigation of a non-quantitative variety.

Confirmatory Factor Analyses

Confirmatory factor analyses were conducted in anticipation of the later SEM procedures and as way to ensure that the factor structures fitted the data (Byrne, 2016). Full reports of these analyses are presented elsewhere (De Nobile, 2020). To assess model fit a variety of fit indices should be calculated so that greater confidence about the fit can be achieved (Jackson et al., 2009). Fit indices used included the chi-square statistic

(χ^2) but, as this statistic is sensitive to large samples, a relative chi-square statistic (χ^2/df) was also calculated (Hooper et al., 2008). In addition, an absolute fit index, the Goodness of Fit Index (GFI), an incremental fit index, the Comparative Fit Index (CFI), and two residual-based measures of fit, the Standardized Root Mean Square Residual (SRMR) and the Root Mean Square of Error of Approximation (RMSEA) were also used (Hu and Bentler, 1999). The confirmatory factor analysis procedures commenced in each case with the initial models based on structures identified in EFA, with no correlated variables. In both the organizational communication and job satisfaction models, goodness of fit and modification indices suggested that some re-specifications were needed.

With regard to the organizational communication factors from the OCPSQ, the ten that emerged from EFA were validated, but some re-specifications were necessary. These modifications are reported elsewhere (De Nobile, 2020). The problem of too many items per factor, recognized as a potential problem by Hair et al. (2019), was also preventing good fit. Removal of 19 items that had the lowest loadings on their factors or cross-loaded on other factors, led to an acceptable model.

Confirmatory factor analysis of the job satisfaction model from the TJSQ involved substantial modifications. A comprehensive report of this analysis is forthcoming as space does not permit a full explanation here. As with the organizational communication model, correlations between factors and error term co-variances needed to be added as parameters in the model. Of note was the high correlation between *JS Recognition* and *JS Feedback* ($r = 0.78$, $p < 0.001$) suggesting an understandably strong link between recognition and feedback. The correlations of *JS Leadership* with *JS Recognition* ($r = 0.54$, $p < 0.001$) and *JS Feedback* ($r = 0.46$, $p < 0.001$) made sense as both are often associated with leadership behavior.

JS Professional growth and JS Policy failed to be successfully identified in the model. Their removal, along with a number of items with low loadings that were part of 'large' factors (Hair et al., 2019) led to a six factor model of job satisfaction that had acceptable goodness of fit. A total of 18 items were removed. The results of the CFA processes for organizational communication and job satisfaction are presented in **Table 5**.

Structural Equation Modeling

Structural equation modeling was then employed to test the hypothesized effects of aspects of organizational communication on dimensions of job satisfaction. In this case, the technique was a path analysis to test and refine a model of the hypothesized relationships (Byrne, 2016). In line with the process described by Byrne (2016), an initial model was constructed, estimates calculated on the specified parameters, fit indices were used to check the model fit, and modifications were considered in light of fit indices and modification indices (including standardized regression weights and standardized residual co-variances as indicators). The linking of some co-variances between different factors was due to potential inter-correlations between the constructs which we explain more about below and which in these circumstances would be considered acceptable practice, though not ideal (Hooper et al., 2008; Byrne, 2016). A more detailed explanation of these in relation to the communication factors can be found in previous work (De Nobile, 2020). Any modification would trigger a repeat of the process until a model with the best fit was obtained, which also made sense theoretically (Hooper et al., 2008).

In relation to goodness of fit, several scholars have suggested the use of a mix of fit indices to evaluate the fit of structural equation models so that one can be sure that the results are aligned to the data (Mueller and Hancock, 2008; Jackson et al., 2009). The Goodness of Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI) were used as initial, global, estimates of fit, but given their propensity to be influenced by sample size (Byrne, 2016), two incremental fit indices were also employed. The Tucker Lewis Index (TLI) and the Comparative Fit Index (CFI) account for sample size and are considered robust measures of complex models (Hu and Bentler, 1999; Jackson et al., 2009). The SRMA and RMSEA indices were also used as recommended by Hu and Bentler (1999).

The initial model reflected the results of the multiple regression analyses with main predictors linked to the associated job satisfaction dimensions and no other parameters specified. *JS Professional Growth* and *JS Policy* were, of course, not included in the model. As shown in **Table 6**, fit indices were encouraging but not ideal and further specification was required. Secondary predictors from the multiple regressions were linked to their respective job satisfaction factors. For example, paths from *Overload* to *JS Leadership* and *Democratic* to *JS Teaching* were included in the model. With the linkage of organizational communication to job satisfaction several error co-variances between items on each side were greatly diminished (many falling to below 0.10), so these were removed. Modification indices suggested that *JS Workload* and *JS Teaching* were correlated ($r = 0.36$, $p < 0.001$) and that an effect path should be added from *Horizontal supportive* to *JS Working conditions* (estimate = 0.23, $p < 0.001$).

Correlations between communication factors were noted. These were to be expected as it is well known that communication interactions can serve more than one function (De Nobile, 2020). For example, supportive communication messages may also provide an opportunity for cultural communication to take place (Zaremba, 2006). In addition, openness of communication can encourage supportive and democratic communication interactions (Eisenberg et al., 2007). In a similar vein, it is well established that dimensions of job satisfaction may be interrelated (Spector, 1985; Top et al., 2013; Lepold et al., 2018; Tsounis and Sarafis, 2018). We therefore expected some inter-correlations among each set of factors.

Upward supportive and *Access* were removed as they contributed nothing to the model and their removal improved the fit. This removal led to a series of trial modifications where communication factors, followed by job satisfaction factors were removed from the model one by one to test model fit. Interestingly, *JS Colleagues* was ultimately removed because its items added little to the overall model and the removal led to substantially improved fit. These

TABLE 5 | Summary of CFA results.

Model	χ^2	df	χ^2/df	*p*	GFI	CFI	SRMR	RMSEA
Organizational communication								
First Model (10 Factor)	7878.69	1776	4.43	0.000	0.802	0.857	0.066	0.053
Final Model (10 Factor)	2188.12	818	2.68	0.000	0.922	0.951	0.030	0.037
Job satisfaction								
First Model (8 Factor)	3990.89	909	4.39	0.000	0.858	0.867	0.054	0.058
Final Model (6 Factor)	1062.30	375	2.83	0.000	0.943	0.953	0.030	0.039

TABLE 6 | Comparison of structural models.

Model	χ^2	df	χ^2/df	*p*	GFI	AGFI	TLI	CFI	SRMR	RMSEA
Initial	6853.57	2544	2.694	0.000	0.861	0.848	0.904	0.910	0.045	0.037
Final	4014.01	1536	2.613	0.000	0.896	0.884	0.931	0.936	0.033	0.036

modifications, alongside removal of further items due to low loadings (below 0.300) resulted in a final model with acceptable fit as summarized in **Table 6**. We note that although TLI and CFI readings were below the desirable threshold of 0.950, other estimates were indicative of a good fitting model (SRMR = 0.034, RMSEA = 0.036 LO90 = 0.035 HI90 = 0.038, NCP = 2478.01 LO90 = 2294.30 HI90 = 2669.28).

The removal of items led to interest in ongoing validity and reliability of factors within the structural model subsequent to all the modifications. This warranted analyses of average variance extracted (AVE) and estimation of composite reliability (CR) in accordance with suggestions from scholars in the field (Fornell and Larcker, 1981; Peterson and Kim, 2013; dos Santos and Cirillo, 2021). The AVE and CR for each factor in the final model were calculated in Microsoft Excel. The currently accepted rule of thumb for acceptability has been suggested as 0.5 for AVE, and 0.6 for CR (Fornell and Larcker, 1981; Hair et al., 2019).

As can be seen in **Tables 7**, **8**, CR indices were robust for all of the organizational communication and job satisfaction factors. The AVE indices for some of the factors were below 0.5, suggesting that for these factors less than half of the variance in the construct might have been explained by the items (Hair et al., 2019). While there were items with loadings that Hair et al. (2019) might consider low on some factors (i.e., <0.708), these were retained in the model due to their theoretical contribution to the constructs and consideration from the EFA procedure that removal of items did not significantly improve factor reliability and removal also impacted fit. Indeed, item loadings below 0.7 are often retained by researchers using similar kinds of measures for these reasons (see, for example, Raubenheimer, 2004; Short et al., 2005; Yusoff, 2011; Watson et al., 2017; Watts et al., 2020) and Klein (2011) has advised strongly on reconsidering removal of items where reliabilities are at an acceptable level.

The final model is shown in **Figure 2** (inter-correlations and error covariances omitted for clarity). Effect coefficients, alongside critical ratios and probability values, are shown in **Table 9**.

While aspects of organizational communication had relationships with all dimensions of job satisfaction in the multiple regressions, the final structural model clarifies those results. The aspects of communication with the most important effects on job satisfaction were *Vertical openness*, *Downward supportive*, *Horizontal supportive*, *Directive,* and *Democratic*. We therefore have a clearer answer to the research question. What follows is a more detailed discussion of the results in relation to the stated hypotheses.

H1 was not supported. A positive association existed between *Directive* and one dimension of job satisfaction, *JS Feedback*. While the hypothesis was not supported, this finding does provide support for an opposite direction relationship with job satisfaction as implied by some research (for example, Arlestig, 2007; Supovitz et al., 2010).

H2 was supported in terms of directionality. Multiple regression analyses revealed *Cultural* to have positive associations with three job satisfaction dimensions, but this aspect of communication did not have any significant effect on the structural equation model. However, its removal from the model resulted in depleted goodness of fit (GFI = 0.881, CFI = 0.917, RMSEA = 0.038), so it was retained.

H3 received strong support as all three types of supportive communication were predictors of job satisfaction in the multiple regression analyses. While *Upward supportive* was not important to the structural equation model, supportive communication from the downward and horizontal directions was found to have moderate to strong effects on satisfaction from recognition, feedback, and teaching. Instances of affirmation, praise, and concern that typify *Downward supportive* may contribute to perceptions of received feedback and recognition (Dinham and Scott, 2000) and indeed the three can be conflated as an experience of working life in schools (You and Conley, 2015). The influence of *Horizontal supportive* on *JS Teaching* may reflect the importance of emotional or social support from colleagues to their feelings about work (Gaertner, 2000; You and Conley, 2015; Msuya, 2016).

H4 was supported. *Democratic* contributed variance to several dimensions of job satisfaction in the multiple regression analyses.

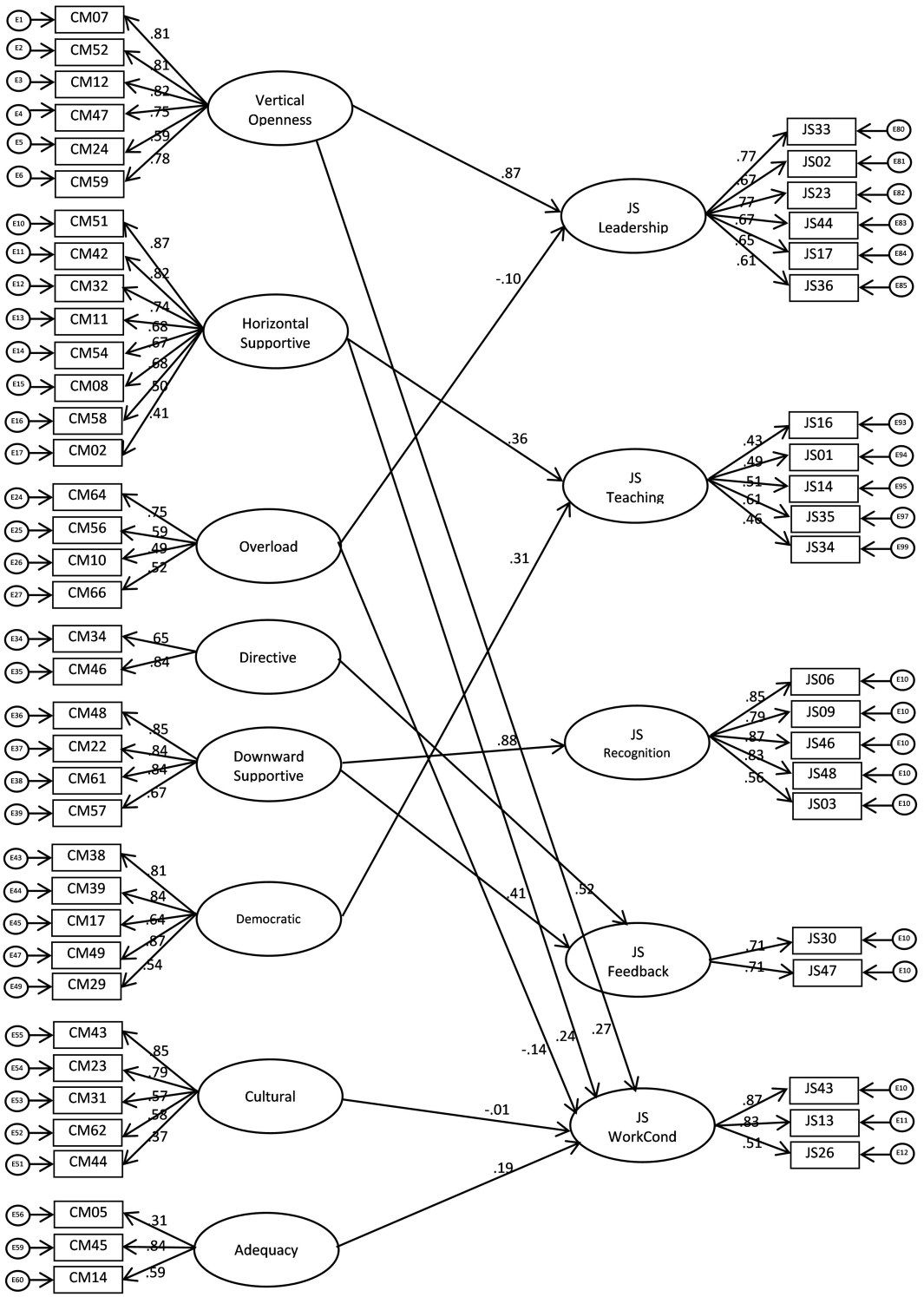

FIGURE 2 | Final path model with standardized estimates (inter-correlations and error covariances omitted for clarity).

TABLE 7 | CFA factor regression weights and validity for OCPSQ.

Item		Factor	Loading	AVE	CR
CM07	←	Vertical openness	0.805	0.581	0.892
CM52	←	Vertical openness	0.810		
CM12	←	Vertical openness	0.823		
CM47	←	Vertical openness	0.745		
CM24	←	Vertical openness	0.585		
CM59	←	Vertical openness	0.780		
CM51	←	Horizontal supportive	0.869	0.470	0.872
CM42	←	Horizontal supportive	0.816		
CM32	←	Horizontal supportive	0.740		
CM11	←	Horizontal supportive	0.683		
CM54	←	Horizontal supportive	0.673		
CM08	←	Horizontal supportive	0.677		
CM58	←	Horizontal supportive	0.495		
CM02	←	Horizontal supportive	0.411		
CM64	←	Overload	0.746	0.354	0.680
CM56	←	Overload	0.593		
CM10	←	Overload	0.486		
CM66	←	Overload	0.520		
CM34	←	Directive	0.649	0.565	0.719
CM46	←	Directive	0.842		
CM48	←	Downward supportive	0.849	0.648	0.879
CM22	←	Downward supportive	0.844		
CM61	←	Downward supportive	0.841		
CM57	←	Downward supportive	0.671		
CM38	←	Democratic	0.809	0.563	0.862
CM39	←	Democratic	0.839		
CM17	←	Democratic	0.639		
CM49	←	Democratic	0.871		
CM29	←	Democratic	0.539		
CM43	←	Cultural	0.854	0.431	0.779
CM23	←	Cultural	0.789		
CM31	←	Cultural	0.568		
CM62	←	Cultural	0.584		
CM44	←	Cultural	0.371		
CM05	←	Adequacy	0.305	0.437	0.690
CM45	←	Adequacy	0.841		
CM14	←	Adequacy	0.593		

AVE, average variance explained; CR, composite reliability.

TABLE 8 | CFA factor regression weights and validity for TJSQ.

Item		Factor	Loading	AVE	CR
JS33	←	JS Leadership	0.767	0.479	0.846
JS02	←	JS Leadership	0.671		
JS23	←	JS Leadership	0.769		
JS44	←	JS Leadership	0.667		
JS17	←	JS Leadership	0.652		
JS36	←	JS Leadership	0.612		
JS16	←	JS Teaching	0.430	0.253	0.625
JS01	←	JS Teaching	0.488		
JS14	←	JS Teaching	0.514		
JS35	←	JS Teaching	0.605		
JS34	←	JS Teaching	0.458		
JS06	←	JS Recognition	0.850	0.619	0.888
JS09	←	JS Recognition	0.785		
JS46	←	JS Recognition	0.868		
JS48	←	JS Recognition	0.832		
JS03	←	JS Recognition	0.557		
JS30	←	JS Feedback	0.708	0.503	0.669
JS47	←	JS Feedback	0.710		
JS43	←	JS Work Conditions	0.868	0.567	0.790
JS13	←	JS Work Conditions	0.829		
JS26	←	JS Work Conditions	0.512		

AVE, average variance explained; CR, composite reliability.

TABLE 9 | Summary of effects in the final model.

			β	*B*	SE	C.R.	*p*
JS Leadership	←	Vertical openness	0.87	0.64	0.033	19.506	0.001
JS Leadership	←	Overload	−0.10	−0.13	0.037	−3.450	0.002
JS Teaching	←	Horizontal supportive	0.36	0.53	0.073	7.239	0.001
JS Teaching	←	Democratic	0.31	0.23	0.034	6.913	0.001
JS Recognition	←	Downward supportive	0.88	0.91	0.053	17.274	0.001
JS Feedback	←	Downward supportive	0.41	0.43	0.047	9.078	0.001
JS Feedback	←	Directive	0.52	0.47	0.043	11.098	0.001
JS Working Cond.	←	Vertical openness	0.27	0.25	0.065	3.787	0.001
JS Working Cond.	←	Horizontal supportive	0.24	0.58	0.156	3.686	0.001
JS Working Cond.	←	Overload	−0.14	−0.23	0.079	−2.896	0.004
JS Working Cond.	←	Adequacy	0.19	0.43	0.152	2.840	0.005
JS Working Cond.	←	Cultural	−0.01	−0.03	0.092	−0.299	0.765

β, *standardized regression estimate; B, unstandardized regression estimate; SE, standard error; C.R., critical ratio for statistical significance; p, probability value.*

However, its effect on *JS Teaching* was most important in the structural equation model. Given the literature that exists, we would say that this reflects the professionalism that is at the heart of teaching and other roles in schools. Being able to influence decision making about work and contribute to policy has been shown to be a source of empowerment and satisfaction (Hulpia et al., 2009; Sarafidou and Chatziioannidis, 2013).

H5 received strong support through the effects of *Vertical openness* on *JS Leadership* and *JS Working conditions*. Openness has been recognized as a key ingredient of positive relationships with leaders and perceptions of positive school climates that are also impacted by leadership (Hoy and Miskel, 2013; Collie et al., 2016). The link with working conditions suggests that staff members see openness as part of the work milieu. Our conceptualization of openness as a feature of organizational communication is congruent with that notion and the idea it that facilitates other processes such as decision making (Xia et al., 2016).

H6 was supported. *Adequacy* was noted as a minor predictor of job satisfaction dimensions in the multiple regression analyses, but the structural equation model found it to have its most important effects on *JS Working conditions*. As with openness, our explanation of this relationship centers on the notion of openness as a feature of communication. Like openness adequacy of communication has been reported as a facilitator of processes and work performance (Scott et al., 1999; Xia et al., 2016).

H7, relating to *Overload*, received support. Interestingly, while *Overload* accounted for variance in almost every job satisfaction dimension in the multiple regression analyses, it was found to have small effects on just two dimensions, *JS Leadership* and

JS Working conditions, in the structural model. Its relationship with satisfaction from working conditions can be explained, like *Vertical openness* and *Adequacy* above, as a reflection of it being perceived as a feature of work life. *Overload* has certainly been reported as a negative aspect of the work environment in previous research (for example, Cho et al., 2011).

H8 did not receive support, of course, because communication underload did not emerge as a factor. *Access*, which emerged as a non-hypothesized factor, was the main predictor of satisfaction from policy. The removal of that dimension from the job satisfaction model probably explains why *Access* was not more prominent in the structural equation model. We maintain that its removal from further analyses, along with *Upward supportive*, does not mean they are not important organizational communication variables that should be studied. Previous research has suggested they can contribute to job satisfaction (De Nobile and McCormick, 2008; De Nobile, 2017).

Finally, the removal of *JS Colleagues* from the model warrants some comment. Colleagues and collegial relations has been a commonly reported source of job satisfaction (Lester, 1988; Gaertner, 2000; Skaalvik and Skaalvik, 2011; Spector, 2012). The poor contribution to the model in this study does not suggest that colleagues are not important. The effects of *Horizontal* support in this study attest to the value of colleagues. However, it might be that, for this sample, satisfaction from colleagues was not as important as teachers (a majority of the sample here) mostly work on their own in classrooms perhaps negating the need for colleagues. This might reflect the workload intensification teachers in Australia have been enduring over recent years (Fitzgerald et al., 2019), resulting in reduced opportunities for colleagues to get together, which can impact negatively on job satisfaction and encourage turnover intention (Arnup and Bowles, 2016). This is, of course, speculation and other data, such as interviews, would have been useful to explain this result.

CONCLUSION

This study has identified significant relationships between 10 aspects of organizational communication and several dimensions of job satisfaction. The five most important aspects of organizational communication were related to openness between principal and staff as well as supportive, directive, and democratic communication.

Openness between principals and staff was found to contribute to job satisfaction through its strong effects on satisfaction from leadership and working conditions. This is an important finding because much of the literature relating leadership communication to job satisfaction refers to supportiveness and openness is not as frequently investigated for such a relationship. In congruence with similar findings from a number of previous studies, supportive communication from the principal was shown to influence staff member job satisfaction through its strong effects on satisfaction from recognition and work related feedback, while supportive communication among colleagues seemed to influence satisfaction from the teaching and teaching related activities as well as working conditions. What differentiates this result from previous research is that satisfaction from working conditions, not as one might logically assume satisfaction from colleagues, was important in the relationship.

Democratic communication contributed to staff job satisfaction through satisfaction from teaching. While participation in decision making has been linked to job satisfaction in previous literature, the finding reported here is important for two reasons. First, the construct of democratic communication does not just include participation in decision making as input by teachers and other staff individually, but also the work of teams. That this more inclusive conceptualization of participation has an effect on job satisfaction is an extension of the knowledge existing to date. Second, we have reported a specific link with satisfaction from teaching, where most of the related literature has only focused participation in decision making and general or global job satisfaction. It is now possible to explain the relationship in more detailed terms.

Directive communication from the principal was shown to influence job satisfaction with feedback positively. This finding supports a positive relationship with a dimension of job satisfaction that is not commonly investigated in the extant literature and makes a case for benefits that can come from principal direction (Arlestig, 2007; Supovitz et al., 2010).

The influences of communication involving leadership behaviors on job satisfaction were substantial and the findings reinforce the link between leadership behavior and staff member job satisfaction established in previous literature. Indeed, these findings contribute to that knowledge by suggesting specific leadership communication behaviors, from a comprehensive set, that are most important to job satisfaction of primary school staff. As job satisfaction has been strongly linked to morale and commitment (Hulpia et al., 2009; Collie et al., 2016) and given the links between these three variables and negative outcomes such as withdrawal and turnover (You and Conley, 2015; Judge et al., 2017), organizational communication is of vital concern to school leaders and the results of this study hold implications for leadership practice in schools.

Openness is a key aspect of organizational communication because it can actually facilitate downward supportive communication (Lee and Jablin, 1995) and encourage participation in decision making so essential to democratic communication (Stohl and Cheney, 2001). An 'open leadership' has been found to encourage participation in decision making and empower staff (Endacott et al., 2016). It is also crucial to positive school climate (Hoy and Miskel, 2013). Openness between leadership and staff can be established or maintained via principal approachability. This does not simply mean an open door policy as is commonly practiced (sometimes in name only). It means being an approachable leader in the socio-emotional sense that staff members can speak candidly (even critically) to school leadership without worrying about negative feedback in return (Jablin, 1979; Endacott et al., 2016).

Openness requires that school leaders show trust in staff members' intentions in relation to collaboration, innovation,

and their expertise (Hoy and Miskel, 2013), so an ability to build trust is vital to school leaders wishing to create a positive work environment (Endacott et al., 2016). Downward supportiveness helps to build trust, and in turn nurtures openness (Lee and Jablin, 1995). This is all helped by moving from a low-trust, supervisory style of leadership to one of trust and collaborative collegiality (Hoy and Miskel, 2013; Xia et al., 2016). This type of environment should logically flow on to foster horizontal supportiveness among staff, which means that school leaders need to be encouragers of collegial communities (Arlestig, 2007).

The directive communication of principals is important too. In positive school climates, principals tend to be involved with staff in the day to day operations of the school, lead by example and provide advice and direction, but in a collegial, supportive, and trusting manner (Arlestig, 2007; Hoy and Miskel, 2013; Van Maele and Van Houtte, 2015). The fact that directive communication had a positive effect of satisfaction from feedback suggests that this might be the case in many of the schools in this study.

Ability to foster open, supportive, and democratic communication as well as provide positive directive communication should be required competencies expected of principals and other school leaders. Democratic communication needs to be conceptualized as competency in encouraging input from staff as well as encouraging and nurturing the work of teams. Further, these aspects of communication should be the focus of professional development efforts for aspiring leaders and for school staff generally. They are also areas of school communication to be closely examined in school review processes. Communication adequacy and overload were also notable influences on job satisfaction in this study, so it follows that skills in monitoring and streamlining communication networks in schools are additional competencies that should be required of school leaders.

While this study was based on a large sample, generalizability of the results needs to be considered in light of the fact that the 1575 participants represent a fraction of the population working in Australian primary schools. Furthermore, this article refers to outcome variables such as wellbeing and turnover. While the research scope was limited to job satisfaction as a known predictor of these (Millburn, 2011; Shine, 2015), it remains that those variables were not measured and future research should incorporate them as flow-on variables from job satisfaction. Importantly, general job satisfaction was not measured. This might have limited the amount of explanation of effects of communication among job satisfaction variables (Hair et al., 2019) and future research should consider a multiple-item measure of general job satisfaction. The use of qualitative data, such as interviews, would no doubt help to explain the relationships identified here in greater detail.

These limitations notwithstanding, this article has identified key aspects of organizational communication influencing job satisfaction from a wide range of possibilities in line with the aims of the research. The findings have led to recommendations for school leadership practice that have the potential to minimize the negative outcomes of low job satisfaction such as withdrawal and turnover, and in doing so, make teachers more productive, students better served, and schools more effective.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Dr. Margaret Stuart, Director, Ethics Review Committee [Human Research] Macquarie University. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

JD conducted the research including data collection, analysis, and write-up. AB assisted with data analysis and contributed to the write-up of the method. Both authors contributed to the article and approved the submitted version.

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