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Keywords

functional, leadership, schools, interdependence, task, perceptions

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Perceptions of Task Interdependence and Functional Leadership in Schools

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Keywords: Team Leadership, Task Interdependence, Psychological Collectivism, Self-Efficacy for Teamwork

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Abstract

The context of the study was senior leadership teams in schools in Australia. The study investigated relationships between task interdependence, psychological collectivism, self-efficacy for teamwork, and team member perceptions of leadership functions. A cross sectional and correlational research design was employed. Fifty seven senior leadership teams composed of principals and senior teachers within two Catholic education systems in New South Wales Australia participated in the study. Data were collected from an online survey completed by senior leadership team members and analyzed using multi-level data analysis strategies. The findings suggest the extent of functional leadership was positively related to perceived task interdependence.

Perceptions of Task Interdependence and Functional Leadership in Schools

Work in schools is increasingly organized around teams, whereby two or more people interact interdependently to achieve common goals (Kozlowski & Bell, 2003). Teams generally are considered potentially effective because they can bring together diverse skills, expertise, and experience necessary to tackle the exceptional complexities of school environments. However, for any team to be effective, much depends on members achieving team synergy and coherence of actions (Zaccaro, Heinen & Shuffler, 2009). Thus, getting people to work well together is a challenge that must be addressed because team effectiveness is likely to be determined by synergistic team member actions, and this focuses attention on the factors that might influence the performance of individuals working in teams.

Several scholars (Kozlowski, Watola, Jensen, Kim & Botero, 2009; Zaccaro et al., 2009) have argued leadership is central to the development and support of team processes that contribute to successful team performance because it facilitates team coordination. Recent research evidence (Barnett & McCormick, 2012; Burke et al., 2006; DeRue, Nahrgang, Wellman & Humphrey, 2011) has emphasized the significance of leadership for successful team effectiveness. Further, some researchers (Burke et al., 2006; Fleishman et al., 1992; Kozlowski, Gully, Salas & Cannon Bowers, 1996a; Zaccaro, Rittman & Marks, 2001) have identified three broad leadership functions: direction setting, managing team operations, and developing team self-management capacity, considered critical for team effectiveness. Despite the contribution made by these studies towards understanding leadership in team settings, the extent to which leadership functions matter (or not) for team effectiveness is likely to be determined by context (DeRue, Barnes & Morgeson, 2010; Kozlowski & Bell, 2003). While the broader environmental and organizational contexts have been emphasized in the literature (Kozlowski & Bell, 2003), the

team context is likely to be the most salient for leadership because it is the most immediate one. Moreover, even if the broader context were important its effect is likely to be mediated through team context, as team members by ‘virtue of their cognition, affect, behavior, and interaction processes enact structural features, such as norms, expectations and roles which serve as team generated contextual constraints’ (Kozlowski & Bell, 2003, p.55). Therefore, we posit that team context has not been given enough attention and needs to be more fully investigated.

Our aim was to deepen current understanding of leadership functions in team settings and contribute new insights by investigating senior leadership teams in school contexts, where extant research is scarce. Thus, the purpose of this study, part of a larger investigation of senior leadership teams (SLTs) in Catholic systemic schools in New South Wales, Australia, was to investigate relationships between team context, specifically task interdependence, psychological collectivism, self-efficacy for team work, and team member perceptions of leadership functions. In this study, we defined the ‘senior leadership team’ as the group that meets with the principal to make decisions for the whole school.

The rest of the article is organized into three parts, the first reviews relevant literature, outlines the conceptual framework and hypotheses investigated in the study. The second part describes research methods, presents results and discussion, and the last, discusses the study’s limitations, conclusions, and implications for research and practice.

Literature Review

Functional Leadership

Most studies of team leadership have adopted a functional view of leadership (Burke et al., 2006). This view contends that, ‘it is [the leader’s] main job to do, or get done, whatever is not being adequately handled for group needs’ (McGrath, 1962, p. 5). Further, functional leadership emphasizes ‘what *needs* to be done’ rather than, ‘what *should* be done’, it does not try to specify

behaviors to accomplish key leadership functions, and it does not attempt to specify who should enact these functions (Hackman & Walton, 1986, Zaccaro et al., 2009).

A number of researchers (e.g., Fleishman et al., 1992; Hackman & Walton, 1986; Hackman, 2002; Kozlowski et al., 1996a; Zaccaro et al., 2001) have extended functional leadership theory. The early work of Hackman and Walton (1986), Hackman (2002), and Fleishman et al., (1992) has been reflected in more recent studies on team leadership (e.g., Burke et al., 2006; Kozlowski et al., 2009; Morgeson, DeRue & Karam, 2010; Zaccaro et al., 2009), which have suggested three core leadership functions: direction setting, management of team operations, and developing team and team member capacity to manage their own problem solving processes, are critical to team effectiveness.

Most of the recent work on team leadership has been conceptual (e.g., Kozlowski et al., 2009; Zaccaro et al., 2009). Of interest to this empirical study, is a series of conceptual models by Kozlowski et al., (1996a) and Kozlowski, Gully, McHugh, Salas & Cannon-Bowers, (1996b), and Kozlowski et al., (2009), which integrate leadership functions with team task and developmental dynamics to develop a meta-theory of team leadership. An important aspect of this work is that it considers and specifies the dynamic contingencies which may influence the focus and application of leadership functions.

One of the contingencies considered by Kozlowski et al., (2009) is task dynamics. These researchers posited 'team tasks are not fixed, rather, they cycle episodically in terms of complexity and load they place on team member resources (cognitive, behavioral, and motivational) engaged as the team works to accomplish goals' (Kozlowski et al., 2009, p. 116). The episodic and cyclical nature of team tasks provides an opportunity for leaders to shape team processes underlying team effectiveness (Kozlowski et al., 2009). Thus, 'during low load, ideally, leaders carry out the function of setting developmental goals, monitor and intervene as necessary

during high load, and diagnose deficiencies and provide feedback as team tasks cycle back to low load' (Kozlowski et al., 2009, p. 117). Other researchers (e.g., Marks, Mathieu & Zaccaro, 2001) conceptualized a two phase team task cycle: a transition phase, which centers on evaluating prior performance and planning for future activities, (placing a low load on team member resources), and an action phase in which members engage in activities directly related to goal accomplishment (placing a high load on member resources). The two phases are dependent on the nature of the task and may vary in duration and should determine the focus and application of leadership functions (Kozlowski et al., 2009).

Morgeson et al., (2010) contended as team members' work together they encounter many challenges which stem from the team operating environment. Such challenges may threaten team viability and goal accomplishment because team members may be unable to regulate their behaviors (Morgeson et al., 2010). This creates needs which must be addressed for the team to successfully accomplish its goals. For example, needs created during the transition phase include developing a shared understanding of direction, goals, and the strategies to accomplish them, and in the action phase monitoring of performance, coordinating actions, engaging in high quality communication, developing capacity, and managing team boundaries (Morgeson et al., 2010). Also, across the two phases interpersonal needs related to motivation, emotions and conflict may occur within the team (Morgeson et al., 2010).

Adopting a functional view of leadership, Morgeson et al., (2010) conceptualized leadership as a process of team need satisfaction to enhance team effectiveness. Thus, it is the role of the leader to satisfy team needs during the transition and action phases of the team task cycle. Following a review of the team leadership literature, Morgeson et al., (2010) developed a framework of fifteen leadership functions that can help to satisfy team needs in the transition and

action phases of the team task cycle. We limit the remainder of this discussion to leadership functions relevant to the transition phase of the team task cycle as this was the focus of this study.

Morgeson et al., (2010) proposed seven leadership functions relevant to team need satisfaction in the transition phase of the team task cycle: (1) ensuring the team has the right mix of people to accomplish goals, (2) defining the team's mission so that a shared understanding of team goals is developed, team members see themselves as part of the team and cohesive relationships are developed, (3) establishing performance expectations and setting goals, (4) structuring and planning the team's work so team members share an understanding of how best to coordinate individual actions, (5) ensuring all team members are capable of performing well, (6) making sense of the team's operating environment, interpreting events and communicating this to the team, and (7) facilitating feedback processes in the team.

Whilst the conceptual models and framework developed by Kozlowski et al., 1996a, 1996b, 2009, and Morgeson et al., (2010) provide important insights into team leadership given certain task dynamics, they are limited because they lack empirical support. This reflects the team leadership literature generally, in which conceptual understanding has outpaced empirical evidence, and there appears little appreciation for the importance of context, and in particular team context in the application of team leadership functions. Team context is likely to be shaped by individual team members' perceptions of task interdependence, and individual team members' attributes, such as psychological collectivism and self-efficacy for teamwork, which may augment or constrain the appropriateness or effectiveness of team leadership functions. These aspects of team context are discussed in the following sections.

Task Interdependence

Task interdependence is the degree to which team members must rely on, and interact with each other to accomplish their tasks effectively (Campion, Medsker & Higgs, 1993; Saavedra,

Earley & Van Dyne, 1993). Task interdependence may refer to the objective degree to which team members depend on one another to perform tasks effectively, or team members' subjective impressions of task interdependence (LeDoux, 2009).

Most of the literature on task interdependence appears to focus on the 'objective' structure, whereby task interdependence is determined by the characteristics of a task (e.g., Janz, Colquitt & Noe, 1997; Thompson, 1967). However, several researchers (e.g., Shea & Guzzo, 1987) have emphasized that groups and teams often exercise discretion in establishing levels of interaction and cooperation necessary for effective task performance, so that the degree of task interdependence may vary, even in apparently identical task environments (Gully, Incalcaterra, Joshi & Beaubien, 2002). As a result, it has been suggested task interdependence may not only be related to task characteristics, and the way work is organized, but also to the way in which people work together (Ramamoorthy & Flood, 2004). Drach-Zahavy & Somech (2010) have contended while task interdependence may be an objective structure, it is likely team members will also attend to social cues, such as the behaviors of leaders and other team members, who 'signal to them how to perceive, interpret and behave' (p.150). Thus, task interdependence is more likely to be 'a blend of objective cues and subjective perceptions of team members' efforts to understand them' (Drach-Zahavy & Somech, 2010, p. 150).

Whilst we agree that for a given team task interdependence may be conceptualized as an 'objective' task structure, we argue that individual team members' perceptions of the extent to which a task is interdependent are more salient. Indeed, our argument is consistent with the so-called Thomas Theorem (McCall, 2013), which asserts that individuals' perceived realities are indeed real for them, and so their consequences are real.

Task interdependence has been shown to be an important moderator of team processes which contribute to team effectiveness (e.g., Barrick, Bradley, Kristoff-Brown & Colbert, 2007,

Gully et al., 2002, Langfred, 2005, Saavedra et al., 1993, and Van Der Vegt, Emans & Van De Vliert, 2000). In addition, meta-analytical findings (e.g., Burke et al., 2006) have shown that when task demands are high, communication and collaboration demands on team members tend to increase dramatically, necessitating a need for leaders to monitor and coordinate team member actions. We describe how we extend this work in the description of the conceptual framework.

Psychological Collectivism

Historically, collectivism was conceptualized at the cultural level (Hofstede, 1984). However, as the organization of work has shifted to teams, arguably, collectivism has become more important in team contexts (Chen, Chen & Meindl, 1998; Dierdorff, Bell & Belohlav, 2011). Generally, collectivists see group interests as more important than individual needs or desires, and tend to look out for the well-being of groups to which they belong, even when such actions involve sacrificing personal interests (Wagner & Moch, 1986). Some scholars (e.g., Chen et al., 1998; Earley & Gibson, 1998; LePine, Hanson, Borman & Motowidlo, 2000) have suggested, because of the emphasis collectivists place on shared responsibility, collectivism should be related positively to team performance. A number of studies (e.g., Campion et al., 1993; Eby & Dobbins, 1997) have provided empirical support for this contention prompting some scholars (e.g., Driskell & Salas, 1992; Miles, 2000) to conclude that a collectivistic orientation likely influences the performance of individuals in teams (Wagner, Humphrey, Meyer & Hollenbeck, 2012).

Despite the findings discussed above, there have been problems with the psychometric properties of collectivism instruments designed for work contexts (Earley & Gibson, 1998). In response, Jackson, Colquitt, Wesson & Zapata-Phelan (2006) developed and validated a measure of collectivism for the work setting, and provided findings that support the importance of this construct for teams. Based on previous work (e.g., Triandis, 1995), collectivism was

conceptualized as an individual difference construct with five facets and labelled psychological collectivism. The five facets were, preference (collectivists value relationships with others and prefer to work in groups), concern (collectivists are motivated by group interest rather than self-interest), reliance (collectivists are comfortable relying on others), norm acceptance (collectivists focus on group rules to foster cooperation in the group), and goal priority (collectivist actions are guided by group interests so group goals take priority over individual goals). Jackson et al., (2006) reported empirical support for the new psychological collectivism measure, and importantly found team members with a collectivist orientation generally performed group tasks better, contributed more to team citizenship, and were less likely to engage in counterproductive behaviors. This finding is consistent with previous research (e.g., Campion et al., 1993; Eby & Dobbins, 1997).

Self-efficacy for Teamwork

Hackman & Wageman (2005) suggested the level of effort team members apply carrying out task work contributes to team performance. A substantial body of research has demonstrated self-efficacy in work settings is a strong predictor of the amount of effort expended by, and persistence of, individuals, particularly in the face of challenging circumstances (Bandura, 1997). Further, other research (e.g., Stajkovic & Luthans, 1998) has reported a moderate effect size ($d=.34$) between self-efficacy and work related performance.

According to Bandura (1986), self-efficacy is domain specific and refers to 'a person's judgement of her/his capability to organize and execute courses of action attaining designated types of performance' (p.391). Self-efficacy for teamwork can be defined as a team member's belief in her or his capability to work in a team to accomplish team goals. In the context of a team, individuals' self-efficacy for teamwork is likely to have implications for team work, and possibly team outcomes, because individual team members bring these attributes to the team.

Individuals with high self-efficacy for teamwork are likely to put in effort and persist in working with other team members, while team members with lower self-efficacy for teamwork may be less likely to put in effort and persist in working with team members to accomplish team goals. Further, a team likely will reflect the attributes of the people who are its members, and a combination of individual team members' self-efficacy for teamwork is likely to create a contextual structure which may enhance or constrain subsequent team processes and outcomes (McClough & Rogelberg, 2003).

Conceptual Framework and Hypotheses

Our conceptual framework was developed from the literature. Specifically, this framework proposes task interdependence, psychological collectivism and self-efficacy for team work shape the extent to which team members perceive the principal to enact team functions relevant to the transition phase of the team task cycle.

First, previous meta-analytical work has suggested task interdependence positively predicts team leadership functions (Burke et al., 2006). However, task demands and interdependencies may not necessarily be in a steady state, and are likely to be sensitive to external factors and different phases of the team task cycle. In the transition phase of the team task cycle, team members need to work together to establish and develop a shared understanding of goals, structures, plans and processes that will enable the team to perform effectively in the future. If this involves a high level of task complexity it will necessitate higher degrees of integration, coordination and interdependence among team members. A higher degree of task interdependence is likely to place a heavier load on team member resources (cognition, behavior and motivation) as team members must communicate, collaborate and interact more often in a coherent fashion to accomplish team goals. Further, this is likely to necessitate a need for monitoring, coordination and development of team member capacity, and so creates an

environment for a principal to enact team leadership functions, which assist team members to regulate behavior coherently for goal accomplishment. Therefore, the higher the degree of task interdependence the more likely the team will need to communicate, collaborate and interact to complete a team task, and the more likely the relevant leadership functions will be enacted by a principal, and vice versa. Hence, we propose the following hypothesis:

H1: Task interdependence will positively predict team member perceptions of the extent to which the principal enacts team leadership functions in the transition phase of the team task cycle.

Second, given the importance collectivists place on team membership and the needs of groups, they will tend to value being part of the team, will naturally affiliate with the team, and place team goals above their own (Wagner, 1995). Thus, the higher team members' psychological collectivism, the more likely they will be open to, accepting of, and respond positively to, team leadership functions enacted by a principal, which by definition focus on helping the team integrate and coordinate individual actions to accomplish team goals. Further, this relationship is also likely to be shaped by the extent to which team members perceive whether the enactment of team leadership functions actually promotes quality interaction, generates appropriate strategies for group task accomplishment, and develops team capacity. Therefore it is hypothesized:

H2: Psychological collectivism will positively predict team member perceptions of the extent to which the principal enacts team leadership functions in the transition phase of the team task cycle.

Last, in the transition phase of the team task cycle, a principal is likely to facilitate team performance through specific leadership functions, defining the mission, establishing expectations and setting goals, and structuring and planning. Defining the mission establishes a common understanding with regard to direction, goal specification provides a target for performance, and structuring and planning assist the team in determining how, by whom, and when, the work will be done. Team members with high self-efficacy for teamwork are more likely to believe themselves capable of accomplishing goals, and are more likely to consider and expect a principal to enact supportive team leadership functions. In addition, they are more likely to put in effort and persist until team goals are achieved. Thus, higher levels of self-efficacy for team work are likely to be associated with positive perceptions of the enactment of team leadership functions which assist team members to accomplish goals. Therefore, it is hypothesized:

H3: Self-efficacy for teamwork will positively predict team member perceptions of the extent to which the principal enacts team leadership functions in the transition phase of the team task cycle.

Method

Design, Procedures and Sample

We employed a cross-sectional correlational research design and multilevel techniques to analyse data. Permissions were obtained from university, school authorities and instrument developers. We invited 89 SLTs, each composed of principal, deputy principal, and coordinators, through two systemic Catholic Education Offices in the Sydney and Wollongong metropolitan areas, New South Wales, Australia to participate in the study. In Australia, Catholic schools are either independent or part of a system. Each system is embedded within a Diocese. Australia has

33 Dioceses with the central bureaucracy for schools located within a Catholic Education Office in each Diocese.

A total of 70 SLTs agreed to participate in the study, providing approximately an 79% response rate. The participants were members of the SLT in each school. We excluded 13 teams with fewer than three responses from team members (Zhang, Hempel, Han & Tjosvold, 2007). The final sample comprised 57 SLTs, the average team size was six members ($SD=2.8$), and the mean team tenure was 2.5 years ($SD=1.7$).

Data were collected by an online survey completed anonymously. The survey included measures of perceived task interdependence, psychological collectivism, and self-efficacy for teamwork. In addition, all team members except the principal completed measures of perceived team leadership functions.

Measures

Task interdependence was assessed with a five-item scale adopted from Langfred (2005). The scale measured three aspects of perceived task interdependence, the extent to which team success is determined by team members working together, team members coordinating actions with each other, and the extent to which a team member's work is affected by the work of other team members. Examples of items are, '*to be successful the senior leadership team needs to coordinate its work*' and '*most of my work activities are affected by the work of other people in the senior leadership team*'. We asked participants to refer specifically to the SLT. Participants responded on a five-point scale ranging from not true at all (0) to true to a very great extent (4).

Psychological collectivism was measured with a 15 item scale adapted from Jackson et al., (2006). This scale measured five facets of psychological collectivism: preference for group work, reliance on the group, concern for the well-being of the group, acceptance of group norms and group goal priority. Sample items are, '*I preferred to work in groups rather than working alone*'

(preference); *'I have accepted the rules of groups to which I belong'* (acceptance); *'I have felt comfortable counting on group members to do their part'* (reliance); *'I was concerned about the needs of those groups'* (concern), and *'Group goals were more important to me than my personal goals'* (goals). Participants were asked to refer to the SLT and other work groups to which they had belonged in the past. They responded on a five point rating scale ranging from not true at all (0) to true to a very great extent (4).

Self-efficacy for teamwork was determined by a 13 item scale comprising nine items focused on perceptions of capability to work, contribute, communicate, delegate responsibility, coordinate tasks, resolve conflict, integrate ideas, take on a leadership role, and be effective in that role. Nine items were adapted from Eby and Dobbins (1997) and four items, focused on perceptions of ability to monitor self and team member performance, support team members, and align mission, were derived from Marks et al., (2001). We asked participants to refer to their own experiences of working in a team and rate how confident they were with regard to working in a team. For example, *'Coordinate tasks and activities of a team'*, *'Facilitate communication between people'* and *'Monitor my own performance'*. Participants responded on an 11 point rating scale, which ranged from no confidence (0%) to complete confidence (100%).

Perceptions of extent to which the principal performed transition phase team leadership functions were assessed with an 84 item scale adapted from the team leadership questionnaire (Morgeson et al., 2010). For this study, we measured six dimensions of transition phase team leadership: define mission, sense-making establish expectations and goals, structure and plan, professional growth of team members, and provide feedback. Examples of items were, *'Ensures the team has a clear direction'* (mission), *'Facilitates team understanding of events or situations'* (sense-making), *'Communicates school issues to the team'* (feedback), *'Defines team expectations'* (expectations), *'Helps new team members learn how to do the work of a team'*

(professional growth), '*Structures the work of the team*' (structuring). Senior leadership team members were asked to rate their perceptions of the extent to which the principal displayed team leadership functions on a five point scale, which ranged from not at all true (0) to true to a very great extent (4).

Analysis

Given the hierarchical nature of the data (individuals nested within teams), multilevel analysis was the primary data analytic strategy employed. We developed a series of measurement models using Lisrel 9.1 to determine if task interdependence, psychological collectivism, self-efficacy for teamwork, and team leadership measures captured distinct variables. The measurement models were estimated with diagonally weighted least squares (Jöreskog, 1990) because preliminary data analysis showed violations of distributional assumptions underlying the commonly used maximum likelihood approach. The χ^2 statistic was used to compare the fit of solutions (Brown, 2006). Latent variable scores were generated with Lisrel 9.1 (Jöreskog, 2000). To test the hypotheses, we used Hox's (2010) multilevel modeling procedure which involved starting with a simple unconditional model and proceeding by adding parameters, one at a time testing for significance, after they have been added, at each step.

Results

Measurement Models: Table 1 presents the fit indices for hypothesized and alternate models.

There are several points to be made about Table 1. First, hypothesized models for *team leadership* (define mission, sense-making, establish expectations and goals, provide feedback and grow team members) generally fitted the data well. Second, the hypothesized models for *task interdependence* and *team leadership* (structure and plan) did not fit the data well. As shown in

Table 1, alternative models were estimated in which one indicator was removed from each of the hypothesised models for *task interdependence* and *team leadership* (TL). The model fit indices and corresponding χ^2 difference tests ($p < .05$) shown in Table 1 suggested the alternative models fitted the data significantly better than the hypothesized models for *task interdependence* and *team leadership* (structure and plan).

<Insert Table 1 here>

Third, the results in Table 1 show the hypothesized five factor model for *psychological collectivism* did not fit the data well. Four nested models were estimated, resulting in a two factor model that matched hypothesized factors; fit indices and χ^2 difference tests suggested the final two factor psychological collectivism model (preference and acceptance) was a better fit for these data.

Last, the hypothesized model for *self-efficacy for teamwork* also did not fit the data well. Three alternate models, in which one indicator was removed at a time, were estimated. The final model fitted the data significantly better, as indicated by a χ^2 difference test ($p < .05$), and is shown in Table 1.

In summary, the measurement models' fit indices, and χ^2 difference tests (see Table 1) supported the discriminant validity of task interdependence, psychological collectivism, self-efficacy for teamwork, and team member perceptions of team leadership measures.

Descriptive Statistics: The descriptive statistics, internal consistency estimates are presented in Table 2. There are two noteworthy results. First, Cronbach alpha estimates suggest high levels of internal consistency for most constructs (task interdependence, self-efficacy for teamwork and transition team leadership functions), although, the Cronbach alpha for psychological

collectivism (acceptance) ($\alpha=.56$) is relatively low. We decided to retain psychological collectivism (acceptance) because the factor was part of the original instrument, Cronbach alpha generally may be depressed when there are a small number of items (Raykov, 1998), and most importantly, we considered the scale theoretically sound. Second, Table 2 shows high correlations between team leadership constructs. However, this was not problematic because the team leadership variables were employed as dependent variables.

<Insert Table 2 about here>

Multilevel Modeling: All models were estimated using full information maximum likelihood (FML) in Lisrel 9.1. FML estimation provides parameter estimates and corresponding standard errors, which can be used to determine statistical significance of explanatory variables and include both regression coefficients and variance components in the likelihood function, from which a deviance statistic can be calculated to show how well the data fit the model and enable comparison in model fit between nested models (Hox, 2010). At first, we estimated the intercept-only models for task interdependence, psychological collectivism, self-efficacy for teamwork and transition team leadership functions. The results in Table 3 show that statistically significant variation in all variables can be attributed to differences within teams. Thus, variation in task interdependence, psychological collectivism, self-efficacy for teamwork and leadership functions likely depends on differences in perceptions of individual team members rather than any effect of belonging to a team. However, the lack of variation for task interdependence at the team level was surprising. As a check, we calculated R_{wg} for the interdependence variable. Interestingly, two-thirds of the teams had an R_{wg} index greater than .7 (James, Demaree, & Wolf, 1984), suggesting that there likely was a team level phenomenon of task interdependence, which was relatively consistent across teams. Our tentative explanation for the lack of team level variance

was that the influence of central Catholic Education Offices had resulted in relatively uniform team activity.

<Insert Table 3 here>

Six models were developed with each of the six dimensions of team leadership, define mission, i.e., present the organization's mission in terms of operational goals; sense-making, i.e., identify and interpret the team's context and communicate this to the team; establish expectations, i.e., set team goals; provide team feedback, i.e., provide feedback to the team and individual team members; grow team members, i.e., facilitate personal and professional development of team members; structure and plan, i.e., how work will be accomplished, as dependent variables. In developing the models, we first added level 1 explanatory variables (task interdependence, psychological collectivism [preference], psychological collectivism [acceptance], and self-efficacy for teamwork) one at a time as fixed effects, and assessed the contribution of each explanatory variable in the transition team leadership intermediate models. Intermediate and final models with each of the leadership functions are shown in Tables 4 to 9.

<Insert Tables 4-9 here>

Task interdependence is the only independent variable that is a statistically significant positive predictor of each of the six leadership functions (see Tables 4 to 9). Thus, H1 is completely supported. H2 and H3 are supported to some extent by the Pearson correlation analysis, however, no significant effects were identified in the more comprehensive multilevel models

Discussion

The primacy of task interdependence in the statistical models is striking. Essentially, the extent to which the team leader, i.e., the principal, was perceived by team members to carry out

the six leadership functions was positively related to the extent to which the team members perceived team tasks to be interdependent. It is important not to ascribe unidirectional causality from this result. Indeed, logically, the relationship makes sense in both directions, and may best be conceptualized as dynamic in nature. When tasks were perceived to be interdependent to some extent in the transition phase of leadership functions, it is plausible that certain team 'needs' may have emerged. Defining the mission could have provided a level of coherence across team members. Similarly, sense-making may have assisted team members to establish a consensual view of the team's environment, including the individual parts required to be played by the members of the team (Weick, Sutcliffe & Obstfeld, 2005). Setting clear expectations and providing feedback on the extent to which expectations were met, also likely enabled team members effectively to determine their own future actions, and see how they fitted with other team members. By helping team members to grow, team leaders also assisted them to become more suited to successfully playing their individual roles, and better understanding the roles of other members of the team, including the team leader. Last, by enabling structure and planning to some extent, leaders may have facilitated an effective division of (interdependent) labour within the teams. However, causality could readily be argued in the other direction. That is, the leadership functions fostered a 'need' for task interdependence.

Despite the contributions of these results, it is important to note limitations of the study because they provide directions for further research. First, while effects of common method variance arguably were minimized with the use of multiple data sources (principals and senior leadership team members), it is not possible to rule this out completely because we did not verify these data independently. Second, we recognise that we have not been able to capture the dynamic interactive nature of the relationship between aspects of team context and transition phase team leadership functions investigated in this study. Clearly, it would be desirable to

employ a longitudinal design, which incorporates observations of senior leadership teams in action, in the transition phase of the team performance cycle in the future. However, the sample size illustrates the problems encountered in the investigation of teams in action. Last, our sample is drawn from one schooling sector within the Australian education system, which limits generalization of our findings to this sector only. Given the critical role of senior leadership teams in schools, and the significance of task interdependence for team member perceptions of transition phase team leadership functions reported in this study, an important area for future research would be to investigate task interdependence and team member perceptions of transition phase team leadership functions in senior leadership teams in other school sectors.

Conclusion and Implications for Practice

Arguably, the main conclusion that can be drawn from this study is that team members, particularly team leaders should emphasize perceived interdependence of team tasks when carrying out transition phase leadership functions. Whilst we have focused on the psychological component of task interdependence, one may reasonably argue that the most effective approach would be to build interdependence structurally into tasks, and then attempt to ensure that the interdependence is perceived and internalized by team members. In short, it would appear unwise to attempt to engender perceptions of task interdependence that have no 'objective' validity. To this end, each leadership function should have built-in task interdependence. Of course, this only makes sense when tasks are able to be made interdependent, and team members are willing to approach tasks interdependently.

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Table 1.

Fit indices for measurement models

Variable	<i>df</i>	χ^2	CFI	RMSEA	SRMR
Task Interdependence	2	.51	1.00	.00	.01
Psychological Collectivism	8	23.09*	.99	.00	.04
Self-efficacy Teamwork	35	15.45	1.00	.00	.02
TL (Define Mission)	5	.71	1.00	.00	.00
TL (Sense-making)	9	22.12*	1.00	.00	.02
TL (Expectations)	44	280.65**	.99	.01	.03
TL (Team Feedback)	9	34.96**	1.00	.00	.03
TL(Grow Members)	5	6.61	1.00	.00	.01
TL(Structure & Plan)	5	26.08**	.99	.04	.02

Note. *df*=degrees of freedom, χ^2 =chi square statistics, RMSEA=root mean square error of approximation, SRMR=standardized root mean square residual, **p*<.05, ***p*<.001

Table 2.

Descriptive statistics, internal consistency reliability and correlations

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. Task Interdependence	2.69	1.04	<i>.77</i>									
2. PC(Preference)	2.77	.97	.09	<i>.73</i>								
3. PC(Acceptance)	3.20	.85	.12	.27	<i>.56</i>							
4. Self-efficacy Team	87.57	10.22	.07	.10	.22	<i>.89</i>						
5. TL(Define Mission	3.33	.83	.14	.19	.28	.31	<i>.94</i>					
6. TL(Sense-making)	3.24	.79	.15	.14	.20	.23	.75	<i>.93</i>				
7. TL(Expectations)	3.29	.83	.18	.11	.29	.29	.93	.79	<i>.96</i>			
8. TL (Team Feedback)	3.24	.84	.16	.11	.31	.25	.79	.78	.83	<i>.92</i>		
9. TL(Grow Members)	3.22	.80	.14	.20	.29	.26	.82	.78	.84	.81	<i>.90</i>	
10. TL(Structure & Plan)	3.22	.83	.13	.20	.31	.30	.86	.79	.89	.79	.82	<i>.90</i>

Note. M=raw mean, SD= standard deviation, correlations in bold are significant, $p < .05$, bold and italics are significant, $p < .01$ (one-tailed), and Cronbach alphas are on diagonal.

Table 3

Variance components model for 10 variables showing proportion of between-team and within-team residual variance: 314 teachers in 57 schools.

Variable	Fixed		Random (residual variance)			
	<i>Intercept</i>		<i>Between-team</i>		<i>Within-team</i>	
	Y_{00}	S.E	σ_{u0}^2	S.E	σ_e^2	S.E
Task Interdependence	2.43**	.22	-.22	.51	14.97**	1.30
PC(Preference)	3.09**	.13	.24	.20	3.98**	.35
PC(Acceptance)	3.25**	.14	.29	.23	4.74**	.42
Self-efficacy Teamwork	95.37**	1.18	-9.71	14.68	431.74**	37.61
TL(Define Mission)	-1.12*	.35	-1.94	1.32	38.75**	3.38
TL(Sense-making)	-1.21**	.35	-1.83	1.32	38.85**	3.38
TL(Expectations)	-1.09*	.36	-1.92	1.35	39.56**	3.45
TL(Team feedback)	-0.61*	.38	-2.01	1.50	44.01**	3.83
TL(Grow Members)	-1.11*	.35	-1.84	1.32	38.67**	3.37
TL(Structure & Plan)	-1.14*	.36	-2.06	1.35	39.65**	3.45

Note. * $p < .05$, ** $p < .001$

Table 4

Fixed effects estimates and variance-covariance estimates for models of the predictors for defining the team mission

Effects	Model 1	Model 2	Model 3	Model 4	Model 5	Final Model	Effect Size
<i>Fixed effects</i>							
Intercept	-1.12*	-2.40**	-3.27**	-3.14**	-2.92	-2.40**	.59
Level 1							
X ₁ Task interdependence		.52**	.52**	.53**	.51**	.52**	.32
X ₂ PC (preference)			.29				
X ₃ PC(acceptance)				.23			
X ₄ Self-efficacy team					.01		
<i>Random effects:</i>							
<i>(Team-level)</i>							
Intercept/intercept	-1.94	-2.23	-2.16	-2.10	-2.22	-2.23	
<i>(Individual-level)</i>							
Intercept/intercept	38.75**	34.99**	34.57**	34.60**	34.97**	34.99**	
-2 (Log-Likelihood)	2004.42	1968.40	1965.03	1965.84	1968.28	1968.40	

Note. *p<.05, **p<.001

Table 5

Fixed effects estimates and variance-covariance estimates for models of the predictors of sense-making

Effects	Model 1	Model 2	Model 3	Model 4	Model 5	Final Model	Effect Size
<i>Fixed effects</i>							
Intercept	-1.21**	-2.48**	-3.32**	-3.23**	-3.13*	-2.48**	.60
Level 1							
X ₁ Task interdependence		.52**	.52**	.52**	.51**	.52**	.32
X ₂ PC (preference)			.28				
X ₃ PC(acceptance)				.23			
X ₄ Self-efficacy team					.01		
<i>Random effects:</i>							
<i>(Team-level)</i>							
Intercept/intercept	-1.83	-2.19	-2.13	-2.04	-2.18	-2.19	
<i>(Individual-level)</i>							
Intercept/intercept	38.85**	35.20**	34.82**	34.78**	35.17**	35.20**	
-2 (Log-Likelihood)	2006.13	1970.75	1967.70	1968.13	1970.56	1970.75	

Note. *p<.05, **p<.001

Table 6

Fixed effects estimates and variance-covariance estimates for models of the predictors for establish expectations

Effects	Model 1	Model 2	Model 3	Model 4	Model 5	Final Model	Effect size
<i>Fixed effects</i>							
Intercept	-1.09*	-2.37**	-3.22**	-3.11**	-2.98	-2.37**	.58
Level 1							
X ₁ Task interdependence		.53*	.52**	.53**	.51**	.53*	.32
X ₂ PC (preference)			.28				
X ₃ PC(acceptance)				.23			
X ₄ Self-efficacy team					.01		
<i>Random effects:</i>							
<i>(Team-level)</i>							
Intercept/intercept	-1.92	-2.28	-2.19	-2.14	-2.27	-2.28	
<i>(Individual-level)</i>							
Intercept/intercept	39.56**	35.81**	35.39**	35.41**	35.79**	35.81**	
-2 (Log-Likelihood)	2011.24	1975.64	1972.53	1973.15	1975.49	1975.64	

Note. *p<.05, **p<.001

Table 7

Fixed effects estimates and variance-covariance estimates for models of the predictors for provide feedback to team

Effects	Model 1	Model 2	Model 3	Model 4	Model 5	Final Model	Effect size
<i>Fixed effects</i>							
Intercept	-0.61	-1.98**	-2.90**	-2.80**	-2.72	-1.98**	.49
Level 1							
X ₁ Task interdependence		.56**	.56**	.56**	.55**	.56**	.32
X ₂ PC (preference)			.30				
X ₃ PC(acceptance)				.25			
X ₄ Self-efficacy team					.01		
<i>Random effects:</i>							
<i>(Team-level)</i>							
Intercept/intercept	-2.01	-2.39	-2.29	-2.22	-2.39	-2.39	
<i>(Individual-level)</i>							
Intercept/intercept	44.01**	39.72**	39.24**	39.28**	39.69**	39.72**	
-2 (Log-Likelihood)	2045.31	2008.88	2005.68	2006.20	2008.68	2008.88	

Note. *p<.05, **p<.001

Table 8

Fixed effects estimates and variance-covariance estimates for models of the predictors for grow team members

Effects	Model 1	Model 2	Model 3	Model 4	Model 5	Final Model	Effect size
<i>Fixed effects</i>							
Intercept	-1.11*	-2.40**	-3.28**	-3.17**	-2.99	-2.40**	.59
Level 1							
X ₁ Task interdependence		.53**	.53**	.53**	.52**	.53**	.32
X ₂ PC (preference)			.29				
X ₃ PC(acceptance)				.23			
X ₄ Self-efficacy team					.01		
<i>Random effects:</i>							
<i>(Team-level)</i>							
Intercept/intercept	-1.84	-2.19	-2.11	-2.05	-2.18	-2.19	
<i>(Individual-level)</i>							
Intercept/intercept	38.67**	34.86**	34.43**	34.44**	34.83**	34.86**	
-2 (Log-Likelihood)	2004.48	1967.51	1964.14	1964.82	1967.82	1967.51	

Note. *p<.05, **p<.001

Table 9

Fixed effects estimates and variance-covariance estimates for models of the predictors for structure and plan

Effects	Model 1	Model 2	Model 3	Model 4	Model 5	Final Model	Effect size
<i>Fixed effects</i>							
Intercept	-1.14*	-2.42**	-3.28**	-3.16**	-3.18	-2.42**	.58
Level 1							
X ₁ Task interdependence		.53**	.52**	.53**	.51**	.53**	.32
X ₂ PC (preference)			.28				
X ₃ PC(acceptance)				.23			
X ₄ Self-efficacy team					.01		
<i>Random effects:</i>							
<i>(Team-level)</i>							
Intercept/intercept	-2.06	-2.39	-2.29	-2.33	-2.39	-2.39	
<i>(Individual-level)</i>							
Intercept/intercept	39.65**	35.91**	35.48**	35.59**	35.88**	35.91**	
-2 (Log-Likelihood)	2010.97	1975.56	1972.42	1973.10	1975.32	1975.56	

Note. *p<.05, **p<.001