**Advancing conceptualization and measurement of Psychological Capital as a collective construct.**

# Abstract

*Psychological Capital (PsyCap) has been conceptualized as an individual-level construct concerned with an employee’s state of positive psychological development. However, research has now started to examine PsyCap as a collective phenomenon. Although positive associations between team-level PsyCap and team-level functioning have been empirically demonstrated, there has been limited synopsis regarding the theoretical and measurement foundations of PsyCap at higher-levels of analysis. This conceptual paper extends collective PsyCap scholarship by applying a multilevel-multireferent framework to explore alternate conceptualizations of collective PsyCap. The framework furthers understanding of PsyCap at higher-levels by exploring unique antecedents and emergent processes relating to five proposed forms of collective PsyCap. A series of testable propositions pertaining to the antecedent network of collective PsyCap are offered to guide empirical multilevel PsyCap research.*

## Keywords: Team; Multilevel; Team Dynamics; Psychological Capital; Theory Development

In a progressively competitive ‘flat-world’ (Friedman, 2005), it is essential that organizations understand and foster employees’ positive psychological capabilities for optimal performance and functioning (Ouweneel, Le Blanc, Schaufel and van Wijhe, 2012). As such, organizational behavior research is increasingly concerned with the identification, investigation and development of positive resources for improved organizational performance (French and Holden, 2013). Positive organizational behavior (POB) encompasses research specifically focused on positive human strengths applicable to the workplace that are measurable, impactful on performance and open to development (West, Patera and Carsten, 2009). Psychological Capital (PsyCap) is a higher-order POB construct defined as an “individual’s positive psychological state of development,” characterized by the psychological resources of self-efficacy, hope, optimism, and resilience (Luthans, Youssef and Avolio, 2007: 3). Recent meta-analytic evidence suggests it is an important predictor of desirable employee attitudes and behaviors including job performance and satisfaction, (Avey, Reichard, Luthans and Mharte, 2011).

Although PsyCap has predominantly been studied at the individual-level, calls have been made to investigate the potential for a collective version of the construct by examining PsyCap in teams and larger groups (Youssef and Luthans, 2011). These calls are in alignment with increasing reliance on team-based structures within organizations (Glassop, 2002) and research aimed at expanding our understanding of team processes and performance (Chou, Wang, Wang, Huang and Cheng, 2008; Gundlach, Zivnusha and Stoner, 2006). Accordingly, a small number of studies have emerged in relation to the notion of *collective* PsyCap (i.e. Clapp-Smith, Vogelgesang and Avey, 2009; Petersen and Zhang, 2011; Vanno, Kaemkate & Wongwanich, 2014).

Although these studies have provided initial empirical support for a collective form of PsyCap, there has been limited exploration of the theoretical frameworks and measurement issues pertaining to its conceptualization and operationalization. This omission is concerning given the importance placed on establishing strong theoretical frameworks in multilevel research. Kozlowski and Klein’s (2000) framework for multilevel theory development centers on a series of principles relating to the *what, how, when, where and why* of theory advancement. Thus, in the first instance a multilevel theory must define the construct of interest (the ‘*what*’). Second, the framework must explain *how* phenomena at different levels are linked, whether that is through top down processes, or bottom up processes, or a combination of both. Closely related to this principle of *how* levels are related, is the principle of *where* – that is, *where* exactly is the level of unit of interest (i.e. team, department or organization). The ‘*when’* principle relates to the potential influence of time on the processes which form the construct of interest. Finally, the *why* (or *why not*) relates to explaining the assumptions that underlie a multilevel model.

This paper aims to contribute to the development of collective PsyCap research by addressing these principles, creating a foundational theoretical framework to guide future research. To this end, we first provide an overview of PsyCap and *extant* collective PsyCap research to highlight rudimentary theoretical foundations and inconsistencies in the conceptualization and operationalization of collective PsyCap. We then propose a new theoretical framework, drawing on principles of social contagion to support the notion of collective PsyCap, before presenting five alternate conceptualizations of collective PsyCap. These alternate forms of collective PsyCap are introduced by employing a multilevel-multireferent framework that differentiates collective PsyCap according to level of analysis and referent. This framework is positioned as imperative for improving the clarity of the conceptualization of collective PsyCap. Using this framework we present a series of theoretically derived propositions relating to potential antecedents of each form of collective PsyCap. Thus, in undertaking these functions, the paper aligns with guidelines for multilevel theory development by conceptually specifying *what* collective PsyCap is, *how* it may emerge, and develops a network of meaningful antecedents *prior* to any further empirical examination of how well the construct predicts outcome variables.

## PsyCap and Collective PsyCap

PsyCap is a higher-order construct derived from a constellation of motivational and behavioral tendencies associated with self-efficacy (‘having confidence to take on and put in the necessary effort to succeed at challenging tasks’); optimism (‘making a positive attribution about succeeding now and in the future’); hope (‘persevering towards goals and when necessary, redirecting paths to goals’); and resiliency (‘when beset by problems and adversity, sustaining and bouncing back and even beyond to attain success’) (Luthans, Youssef et al., 2007: 3). Support for PsyCap as a higher-order construct has been provided both conceptually (Luthans, Youssef et al., 2007) and empirically (see Avey et al., 2011). In particular, confirmatory factor analyses have demonstrated support for a core underlying factor whereby the shared variance or commonality between each facet comprises the higher-order factor (Luthans, Avolio, Avey and Norman, 2007).

PsyCap and its individual components are considered ‘state-like’ in nature. Using a continuum perspective dichotomized by ‘pure’ poles of state and trait PsyCap is positioned as midrange and therefore a ‘state-like’ construct which is relatively malleable and open to development (Luthans, Youssef et al., 2007). As such, PsyCap is differentiated from both stable, fixed traits (e.g. Big Five personality dimensions, core-self evaluations) and pure, transient states (e.g. moods and emotions). Empirically, evidence has been provided to support the state-like nature of PsyCap and its overall construct validity including convergent and discriminant validity in relation to other constructs (see Dawkins, Martin, Scott and Sanderson, 2013 for a detailed psychometric review of the PsyCap construct).

Although PsyCap literature has focused almost exclusively on the assessment and development of PsyCap at the individual-level, research has begun to explore the notion of *collective PsyCap*. Thus far, three studies have examined PsyCap at a collective level (Table 1), demonstrating positive relationships between team-level PsyCap and team performance (Clapp-Smith et al., 2009; Peterson and Zhang, 2011; Vanno et al., 2014).

[*Insert Table 1 about here*]

These studies provide initial empirical support for the notion of a collective PsyCap construct at the team-level. However, this evidence has emerged without the development of a strong theoretical foundation for collective PsyCap. Only one study (Peterson and Zhang, 2011) has explicitly defined the concept of collective PsyCap. Drawing on the definition of collective efficacy (*“a group’s shared belief in its conjoint capabilities;”* Bandura, 1997: 477), collective PsyCap has been defined as *“the team’s shared positive appraisal of their circumstances and probability for success under those circumstances based on their combined motivated effort and perseverance”* (Peterson & Zhang, 2011, p: 134).

However, beyond providing a definition of collective PsyCap, published studies to date have provided little insight into the theoretical frameworks which serve to explain *why* and *how* collective PsyCap emerges. For instance, Clapp-Smith et al. (2009) cited social cognitive theory (Bandura, 1977) and social contagion theory (Meindl, 1995) to argue that PsyCap can also exist at a collective (i.e. team) level. However, discussion of how these theories relate to the emergence of collective PsyCap is entirely absent from their paper.

Peterson and Zhang (2011) posited that like collective efficacy (Bandura, 1997), collective PsyCap is “the product of the interactive and coordinative dynamics of its members” (Bandura, 1997: 477-478). However, this study did not explicate the specific “interactive and coordinative dynamics” needed for the emergence of collective PsyCap. In particular, there has been no theoretical exposition of factors and processes that underpin the emergence of the other sub-components of collective PsyCap (i.e. collective hope, resilience and optimism).

Additionally, measurement of collective PsyCap has been approached in two different ways. Clapp-Smith et al. (2009) and Peterson and Zhang (2011) implemented a direct-consensus approach to aggregate individual PsyCap to the team-level, while Vanno et al. (2014) used a referent-shift approach. It has been argued that these two methods of aggregation essentially measure two distinct constructs (Mischel and Northcraft, 1997). This issue will be explored in further detail in the following sections of this paper. However, before proceeding to the measurement of collective PsyCap, we will first introduce a new theoretical framework to explicate how, why and when collective PsyCap may emerge.

## Extending the theoretical framework for collective PsyCap

A critical element of the current definition of collective PsyCap is a sense of *sharedness* among team members regarding their perceptions of PsyCap. However, what have not been specified to date are the processes by which team members become akin in PsyCap perceptions, thereby generating collective PsyCap. In this section we introduce a new theoretical framework to demonstrate potential social processes which may contribute to the emergence of PsyCap at higher levels by drawing upon social contagion theory. *Social contagion* refers to the process of communicating and exchanging information among members of a collective resulting in a shared perception regarding some aspect pertinent to the team (Degoey, 2000). Essentially, individuals adopt the attitudes and beliefs of others who influence them. Although social contagion principles have not been applied to collective PsyCap literature, beyond brief citation (Clapp-Smith et al., 2009), this theory has been applied to other organizational phenomena (e.g. job satisfaction; Krackhardt and Porter, 1985).

As a team provides a social context in which members interact and communicate, we put forth that social contagion contributes to the emergence of collective PsyCap. Perceptions regarding each of the four components of PsyCap can become shared among team members via communications regarding the team’s functions and operations. For instance, in the intervention that has been developed to enhance individual PsyCap, (Luthans, Avey, Avolio and Peterson, 2010) a central aspect for PsyCap hope development is a strategic planning process for goal achievement which involves goal design, pathway generation and planning for obstacles. Thus, when team members are actively engaged in goal-oriented discussions, they have the opportunity to exchange beliefs and in turn, share perceptions regarding the best ways in which the team can achieve its stated goals. As a result, multiple pathways towards team goals are generated which is likely to establish a greater sense of team agency. Moreover, engagement in goal-oriented discussions among team members is likely to foster shared perceptions regarding hope, thereby facilitating the emergence of collective hope.

Communications among team members regarding goal pathways and obstacle planning also provides the opportunity for shared positive expectations (optimism) to develop within the team. When individuals are able to identify and plan for obstacles, the expectation for achieving goals increases (Luthans et al., 2010). Thus, when team members communicate about goal development, there is potential for members to develop similarly positive (or negative) expectations – as they adapt how others are planning for and expecting success.

Social interactions among team members regarding previous performance and goal attainment may also foster shared resilience perceptions. Research has shown that feedback from colleagues that helps to identify personal resources (e.g. skills and knowledge) increases the likelihood of success and contributes to the development of individual-level resilience (Luthans et al., 2010). Communications focused on the identification of positive resources within a team (i.e. team skills and knowledge) may also promote a shared sense of resilience among the team. Reflective social exchanges could also allow for transference of shared efficacy among team members. Mastery experiences are a principle source of collective efficacy (Bandura, 1997). When team members share experiences of success it provides evidence to members that the team has the ability and resources needed to succeed. Reflective communication about shared successes within a team is therefore likely to promote congruency of efficacy perceptions among members; thereby facilitating collective efficacy.

## Alternate forms of collective PsyCap using a multilevel-multireferent approach

Thus far we have considered the *‘what’* principle of multilevel research by examining definitional issues related to the construct of collective PsyCap. We have also considered the ‘*how*’ principle by drawing on social contagion theory to outline how team communications and interactions focused on goal setting and future planning, as well as past experiences and goal attainment may be crucial to collective PsyCap formation. In doing so we have theoretically explicated the relationship between collective efficacy and collective PsyCap by highlighting that collective efficacy is simply one component of the multidimensional construct of collective PsyCap. Thus, although some convergence could be expected between collective PsyCap and collective efficacy (given that collective efficacy is a sub-component of the higher-order construct of collective PsyCap), from a theoretical standing we suggest collective PsyCap is a broader construct in terms of ‘*what*’ it represents. Although beyond the scope of this theoretical paper, empirical validation of collective PsyCap, in terms of its convergent and discriminant validity with other constructs, including collective efficacy will be a critical and logical progression to confirm these theoretically-derived suggestions.

However, enormous opportunities remain to further develop the theory in relation to the *where, when and why* (or *why not*) of PsyCap as a multi-level construct. To this end, we suggest that a broadening of current conceptualizations of collective PsyCap is needed, particularly to consider alternate definitions or ‘forms’ of collective PsyCap (Table 2). In particular, we consider a conceptualization of collective PsyCap that is not exclusively reliant on *shared* PsyCap perceptions. It is argued that exclusively conceptualizing and operationalizing constructs as dependent on ample within-group agreement runs the risk of oversimplifying group-level phenomena (Cole, Bedeian, Hirschfeld and Vogel, 2011).

Compositional models for aggregation of individual-level data to higher levels of analysis and the role of within-group agreement provide the basis for our analysis of potential alternate forms of collective PsyCap. Composition models specify the functional relationship between phenomena at different levels of analysis. Chan’s (1998) typology has been a cornerstone in guiding multilevel research in regards to selection of aggregation methods. According to the typology, there are five methods of aggregation: *additive, direct-consensus, referent-shift consensus, dispersion* and *process composition*. As the process composition model does not have an empirical algorithm it will not be considered in further detail here. Rather, the following will concentrate on the four remaining models and explore how each could relate to extant and proposed conceptualizations of collective PsyCap. The potential applications within management practice of each of forms of collective PsyCap will also be considered.

[*Insert Table 2 about here*]

### Collective PsyCap and the additive model:

The additive model represents the most basic form of aggregation, where the collective construct is operationalized by the sum of the lower-level scores (Li and Cropanzano, 2009). Examples include the summation of individuals’ sales figures to represent team sales and summing the years of team member tenure to represent team expertise. Thus, variance among lower level units has no operational or theoretical bearing on aggregating the lower-level construct to the higher-level.

An additive model is considered incongruous with the current definition of collective PsyCap which is dependent upon *shared* PsyCap perceptions among team members and thus, has not been implemented in collective PsyCap research to date. However, there may be instances where consideration of an alternate form of collective PsyCap using the additive model is both necessary and useful. Consider *s*wift s*t*arting *a*ction *t*eams (STATs). STATs are comprised of a group of who have no experience working together; perform the team task immediately upon formation; and face high stakes from their inception (McKinney, Barker, Davis and Smith, 2005). Typical examples include combat teams, aircraft flight crews and disaster response teams. STATs have limited opportunity for the interactions that allow for social contagion of PsyCap perceptions*.* Despite this, it is probable that similar to other forms of capital (i.e. human capital) the summation of individual PsyCap may have meaningful relationships with team-level outcomes. Consequently, in the case of interchangeable teams it may be necessary to modify the conceptualization of collective PsyCap to reflect this. A more appropriate conceptualization of collective PsyCap for newly formed teams and teams with minimal social interaction (e.g. virtual teams) may relate to the *summation* of team member’s individual-level PsyCap perceptions. This conceptualization is akin to the pooled resources framework of team emotional skills (Bell, 2007). This form, which we term *summated PsyCap* may also provide for insight into the potential PsyCap of a team before its inception, as it is measured independent of emergent team processes. As such, *summated PsyCap* could prove useful in guiding managers in creating team compositions likely to yield a higher degree of positivity.

As *summated PsyCap* is independent of emergent team processes it is conceivable that it would more strongly relate to antecedents derived from individual team members rather than team characteristics. Research has found that employees with higher (trait) positive affect are also more likely to have higher PsyCap (Avey, Wernsing and Luthans, 2008) and that older employees report higher PsyCap than younger colleagues (McMurray, Pirola-Merlo, Sarros and Islam, 2010). This is likely to be attributable to more experienced employees having an extended work history of successful experiences and overcoming setbacks to draw on in forming their individual PsyCap perceptions (Dawkins et al., 2013).

*Proposition 1: Employee characteristics including age and positive affect will be important antecedents of summated PsyCap.*

### Collective PsyCap and the direct-consensus model:

The direct-consensus model implements within-group consensus of the lower-level units as the functional relationship to specify how the construct at the lower-level is functionally isomorphic to another form of the construct at the higher-level (Chan, 1998). Typically, a within-group agreement index (e.g. *r*wg; James, Demaree and Wolf, 1984) of the scores from the lower-level with a certain cut-off value (i.e. .70) is employed to represent within-group consensus, and therefore justify aggregation of the construct to the higher-level. When consensus within the unit does not reach the pre-determined cut-off value, it is assumed that there is insufficient agreement among the unit to warrant aggregation to the higher-level (Chan, 1998).

The direct-consensus aggregation method has been implemented in collective PsyCap research (Clapp-Smith et al., 2009; Peterson and Zhang, 2011) with significant findings reported in each of these studies. Despite this, the direct-consensus approach appears incongruent with the current definition of collective PsyCap. For instance, it is questionable that the measurement of an individual’s perceptions of their *own* psychological capital truly reflects a team or group’s PsyCap, despite sufficient within-group agreement. Rather, it may simply demonstrate that the team members are similar in how they perceive their *own* individual psychological capital.

Regardless, it is evident from recent research (Clapp-Smith et al., 2009; Peterson and Zhang, 2011) that similarity within teams regarding individual-referent PsyCap is positively related to team-level performance. As such, we suggest a less ambiguous definition of this form of collective PsyCap which clarifies the level of referent being implemented. We term this *assimilated PsyCap* to reflect agreement (or similarity) among team members regarding their own (individual-referent) PsyCap.

Although social contagion processes are likely to be imperative for the emergence of *assimilated PsyCap* research is needed to pinpoint particular antecedent variables most relevant to this process. For example, team size may play an important role in the emergence of *assimilated PsyCap.* Research has demonstrated that large teams (e.g. 10 or more) provide reduced opportunity for members to contribute ideas and opinions (Colquitt, Noe and Jackson, 2002). This could in part be attributed to *relational loss*. Relational loss is an individual-level process loss where an employee perceives less opportunity for supportive social exchanges as team size increases (Mueller, 2012). Relational loss aligns with resource allocation theory which suggests that employees in larger teams are restricted in terms of the time and effort they can expend on any activity, including the nurturing of individual-level relationships (Oh, Chung and Labianca, 2004). Research has shown that unlike task-related activities (e.g. attaining team goals), relationship building activities are not formally rewarded in organizational contexts (Perlow and Weeks, 2002). As such, employees in large teams may be less inclined to invest time and effort into engaging in and building social relationships.

The effects of relational loss and resource allocation on individual-referent PsyCap among members of teams is yet to be empirically examined. However, it follows that if members of larger teams have less resources (e.g. time and effort) available to them to invest in meaningful social relations with other team members, the potential for social contagion of individual-referent PsyCap perceptions among members of larger teams is inhibited. Consequently, it could be expected that larger teams would demonstrate lower levels of *assimilated PsyCap.*

*Proposition 2: Team size will be negatively related to the emergence of assimilated PsyCap.*

Leadership style may also be influential in the development of *assimilated PsyCap*. Authentic leadership is typified by a leader’s self-awareness, openness and clarity in their actions. Authentic leaders foster follower potential by developing their strengths, including resilience and self-efficacy (Gardner and Schermerhorn, 2004), thereby enhancing performance and functioning. In relation to PsyCap, it has been theorized that authentic leaders draw on their own psychological resources to develop followers’ PsyCap (Luthans and Avolio, 2003). Thus, leaders who encompass authentic-related dimensions (i.e. sharing of information, encouraging team decision-making) are more likely to enhance followers’ PsyCap (Rego, Sousa, Marques and Cunha, 2012)

Similarly, transformational leaders promote follower positivity and motivation by increasing follower self-efficacy, facilitating follower identification with their team or organization and linking the organization’s values to follower values (Shamir, House and Arthur, 1993). Thus, when team members are equally and consistently exposed to these types of leadership styles it could be expected that they would develop similar individual-referent PsyCap perceptions, thereby resulting in assimilated PsyCap.

*Proposition 3: Positive leadership styles including authentic and transformational leadership will be positively related to the emergence of assimilated PsyCap.*

In addition, outcome interdependence may facilitate the emergence of *assimilated PsyCap*. Outcome interdependency reflects the degree to which team members depend on each other at work and is determined by the extent to which significant outcomes that an individual achieves depend on the performance and functioning of other team members (Schippers, Den Hartog, Koopman and Wienk, 2003). For instance, in circumstances whereby individual performance is rewarded on the basis of team performance (e.g. team sales) it is conceivable that individual team members may become aligned in their individual-referent PsyCap perceptions. Campion, Medsker and Higgs (1993) highlighted the importance of outcome interdependence by explaining that team-oriented behavior and attitudes will be enhanced when individual employee feedback and rewards are linked to the overall team performance.

*Proposition 4: Outcome interdependency (e.g. feedback and rewards) will be positively related to the emergence of assimilated PsyCap.*

Organizational climate may also be an important antecedent in shaping the emergence of *assimilated* *PsyCap*. Organizational climate is conceptualized as being characterized by a number of dimensions (see Patterson et al., 2005 for detailed review). Examples of climate dimensions include *flexibility* (i.e. the degree to which employees are encouraged to develop new ideas and approaches), *reflexivity* (i.e. the extent to which people reflect on strategies and objectives in relation to wider goals), *effort* (the degree to which employees work towards goals), and *clarity of organizational goals* (the extent to which organizational goals are clearly defined).

These dimensions share commonality with aspects of PsyCap. For instance, Youssef and Luthans (2011) reported that high levels of hope (pathways) promote greater creativity and innovation. As such, we suggest that a bi-directional relationship may exist between *assimilated PsyCap* and organizational climate. For example, teams demonstrating positive *assimilated PsyCap* may be more likely to perceive their organization as more flexible and reflexive. At the same time, organizations that foster greater flexibility, reflexivity, effort and clarity of organizational goals may in turn promote greater positive *assimilated PsyCap* among their teams.

A supportive organizational climate in which employees perceive that they receive sufficient support from their colleagues, other departments and their supervisor to successfully perform their work duties (Gibbs and Cooper, 2011) may also provide the necessary conditions for PsyCap to flourish. It is posited that employees who feel they are supported at work are more likely to generate alternate pathways towards goals (hope), bounce back following setbacks (resilience) and implement more optimistic attributions. A positive association between perceived supportive organizational climate and individual employee PsyCap has been demonstrated (Luthans, Norman, Avolio and Avey, 2008). Thus, we suggest that when a collective of employees similarly perceive their organization as supportive they are more likely to demonstrate positive *assimilated* PsyCap.

*Proposition 5: Positive organizational climate will be positively related to the emergence of assimilated PsyCap within teams.*

### Collective PsyCap and the referent-shift composition model:

The referent-shift model shares some procedural similarities with the direct-consensus approach, in so far as justification for aggregation to the higher-level is dependent upon sufficient within-group consensus. However, unlike direct-consensus where the referent of interest is the individual’s experience or perceptions (i.e.*“I feel confident…”*), the referent-shift model focuses on the individual’s perception of the unit as a whole (i.e.*“My team feels confident...”*). This new referent is then combined to represent the higher-level construct providing sufficient within-group agreement (Rupp, Bashshur and Liao, 2007).

Chan (1998) suggested that referent-shift composition is important because the change in referent results in a new form of the construct, which is conceptually distinct from the original construct. If we consider collective PsyCap as measured with the referent-shift approach, an individual team member with high individual-level PsyCap can have either high or low team-level PsyCap as the two constructs are distinct. It is because of this distinction that researchers tend to favor the referent-shift approach when measuring team-level constructs, such as collective efficacy (Wallace et al., 2013). For example, it has been suggested that the aggregation of team members’ individual self-efficacy scores as a representation of collective efficacy would be flawed – as these mean scores would still represent individual members’ perceptions of themselves as individuals, and not their perceptions regarding the team as a whole (Guzzo, Yost, Campbell and Shea, 1993). Thus, although the referent-shift approach utilizes individual members’ responses, because these responses are in relation to the team referent, the approach provides a much closer link between team-level theory and measurement.

To date, PsyCap literature is still relatively void of this critical discussion regarding whether individual PsyCap and collective PsyCap are in fact conceptually and functionally isomorphic or rather, distinct constructs. The assumption of conceptual isomorphism appears to have been made in two studies and thus the direct-consensus composition model has been employed (Clapp-Smith et al., 2009; Peterson and Zhang et al., 2011). In contrast, although Vanno et al. (2014) did not specifically discuss the relationship between conceptualization and operationalization, they appear to conceptualize collective PsyCap as a distinct and unique construct from individual-level PsyCap given they implemented a referent-shift consensus model in their analysis.

It is important to reiterate that we do not wish to suggest that there is only one single way to conceptualize and operationalize collective PsyCap. Rather, the critical point to emphasize is that it is essential that the mode of measurement is congruent with the conceptualization of the construct *at each level* of analysis (Chan, 1998). Thus, our aim here is to explore alternative conceptualizations of collective PsyCap along with their corresponding model of measurement, in order to guide future collective PsyCap research.

As such, we propose a further form of collective PsyCap measured using the referent-shift model. We term this *team PsyCap* to avoid confusion with the more general term ofcollective PsyCap. *Team PsyCap* is conceptually distinct from both individual PsyCap and *assimilated* *PsyCap* in that it relates to agreement among team members in regards to the team’s shared (team-referent) PsyCap perception - characterized by hope, efficacy, optimism and resilience. Accordingly, a *team’s shared PsyCap perception* is produced through interactions directly relating to the team (e.g. team-related goal planning) and thereby distinct from the individual PsyCap perceptions team member hold about themselves. This contrasts with the individual-level conceptualization of PsyCap as an “individual’s state of development” characterized by the psychological resources of self-efficacy, hope, optimism, and resilience (Luthans, Youssef et al., 2007: 3).

Similar to *assimilated* *PsyCap*, we postulate that the emergence of team *PsyCap* may relate to antecedent factors such as organizational climate and leadership styles (i.e. authentic leadership and transformational leadership). However, in this case, these factors would influence perceptions of *team PsyCap*, rather than individual-referent PsyCap. For example, an organizational climate which fosters flexibility, reflexivity and effort within teams may, in turn promote team PsyCap, as team members would be encouraged to develop new strategies towards team goals (team hope) and to redirect their efforts when faced with setbacks (team resilience). Similarly, leaders who encompass authentic-related dimensions, such as the sharing of information, encouraging team decision making processes and promoting open and ethical behaviors are likely to enhance team PsyCap (Rego et al., 2012).

However, unlike *assimilated PsyCap* where we suggested that team size may inhibit the contagion of individual-referent PsyCap perceptions among team members, we propose that team size may be positively related to the emergence of *team PsyCap*. Members of larger teams may be more likely to perceive their team as efficacious, hopeful, optimistic and resilient simply because there is greater human capital to underscore these capacities within the team. This view is consistent with previous arguments that “at a most basic level, the resources available to a team result from how many people are on it” (Hambrick and D’Aveni, 1992: 1449). In particular, team size has been positively related to team problem solving capacity. This has been attributed to the broader range of perspectives within larger teams to consider the problem and subsequently generate a greater number of possible solutions, reject erroneous solutions and effectively process information (Laughlin, Hatch, Silver and Boh, 2006).

Team size has also been found to be positively related to team-referent perceptions of team potency (a team’s shared belief regarding the competency of the team; de Jong, de Rutyer and Wetzels, 2005). Similar to team problem solving, this finding was explained in terms of perceived resources available to the team. Thus, when employees perceive their team as having ample human capital they are more likely to perceive the team as having strong team potency.

Capacities such as collective problem solving and team potency share similarities with components of *team PsyCap.* For instance, the hope component of *team PsyCap* reflects the team’s ability to generate multiple pathways towards goal attainment. Given that team size promotes collective problem solving capabilities, it is likely that collective hope would also be promoted as a function of having greater human capital available. Similarly, as collective efficacy is contingent on the experiences and past successes of the members that make up the team, a greater number of team members provide a richer source of experiences to underpin perceptions of team efficacy. Thus, team size may bolster perceptions of *team PsyCap* as there are greater perceived resources available to undergird team hope, efficacy, resilience and optimism.

*Proposition 6: Team size will be positively related to the emergence of team PsyCap.*

However, we contend that factors such as task interdependency and team cohesion and tenure may be unique to the emergence of *team PsyCap*. Task interdependency requires members to cooperate and work interactively in order to achieve specified outcomes. This promotes multiple opportunities for communication and collective planning among team members in order to achieve team goals (Gundlach et al., 2006). Thus, teams with high task interdependency may have greater opportunity to develop *team* *PsyCap* as members would regularly communicate regarding the team’s overall likelihood of achieving goals (team optimism) and their shared belief in their ability to achieve tasks (team efficacy).

Given that *team* *PsyCap* reflects shared perceptions among members regarding the psychological capacities of the overall team, we further postulate that team cohesion would be central to the emergence of team PsyCap. Cohesive teams are defined as consisting of members who are committed to their fellow team members on an interpersonal level and the overall team’s tasks (Goodman, Ravlin and Schminke, 1987). Thus, members of cohesive teams may be more able to identify with the team and therefore, envisage similar assessments of the team in relation to shared psychological capacities (i.e. *team PsyCap*). Conversely, members of teams with low cohesion (and thus, less commitment to the team) may be less able to conceptualize an assessment of team psychological functioning.

*Proposition 7: Task interdependency and team cohesion will be positively related to the emergence of team PsyCap.*

It is also suggested that time and a history of shared outcomes would be related to the emergence of *team PsyCap*. Research has demonstrated that team tenure is positively related to the degree of within-group consensus regarding the team-referent capacities of efficacy, optimism and resilience (West et al., 2009). Specifically, this research showed that newly formed teams only demonstrated sufficient within-group agreement in relation to team optimism. However, following several months of working together, sufficient within-team agreement was also reported in relation to team efficacy and resilience. Thus, a history of team performances may be particularly important for the emergence of team efficacy and resilience. This should be considered when assessing *team PsyCap* in newly formed teams and strengthens our earlier proposition that an alternate form of collective PsyCap (i.e. *summated PsyCap*) may be required depending on team tenure.

*Proposition 8: Team tenure will be positively related to the emergence of team PsyCap.*

### Collective PsyCap and the dispersion model:

Despite the wide use of consensus aggregation models in multilevel research, several limitations of these models have been noted. For instance, it has been argued that by implementing an average of lower-level scores to represent group-level phenomena, the true distribution of underlying scores is overlooked; resulting in potentially meaningful variation in team members’ responses being ignored (Lindell and Brandt, 2000). Consensus models also assume that team members will perceive and understand a construct in a similar manner (Mathieu, Maynard, Rapp and Gilson, 2008). Additionally, consensus models encourage the assumption that only teams with high agreement (e.g. low dispersion) are appropriate for multilevel research. Thus, a bias occurs as research employing these methods only focus on those groups or teams with elevated agreement (Cole et al., 2011). Subsequently, consensus models run the risk of over-simplifying team-level phenomena, resulting in biased and equivocal findings (Colquitt et al., 2002).

Given these limitations approaches that focus on the *variance* of team members’ responses may strengthen multilevel findings and offer more comprehensive understandings regarding team-level phenomena. The dispersion model postulates that the degree to which team members share (or do not share) the same opinion is more than a statistical requirement for aggregation and that dispersion of scores is a construct in its own right (Li and Cropanzano, 2009). As such, within-group variance is no longer treated as error variance, but rather as an operationalization of the focal construct.

Although other areas of organizational behavior research have implemented dispersion modeling (i.e. justice climate strength; Roberson, 2006), to date this approach has not been applied to PsyCap. However, in considering the premise of dispersion modeling, it is clear that there is scope to investigate its application in multilevel PsyCap research. The term *PsyCap strength* has recently been introduced and is defined as “the degree of within-unit agreement among team members’ collective PsyCap perceptions” (Newman, Ucbasaran, Zhu and Hirst, 2014: 124). However, we propose an expansion of this definition is warranted to reflect dispersion in relation to both individual-referent (*assimilated PsyCap*) and team-referent (*team PsyCap*) collective PsyCap. Accordingly, we differentiate between *PsyCap strength* (the degree of dispersion among team members’ individual-referent PsyCap perceptions) and *team PsyCap strength* (the degree of dispersion among team members’ team-referent PsyCap perceptions) (see Table 2).

Exploration of *PsyCap strength* and *team PsyCap strength* could provide further depth to collective PsyCap theory – specifically in relation to the *how, where* and *when* of multilevel theory development (Kozlowski and Klein, 2000). For example, low strength would indicate variation among team members regarding PsyCap perceptions. These variations may occur for several reasons depending on the referent of collective PsyCap. As previously discussed, emergence of *assimilated PsyCap* may be inhibited by team size due to relational loss. This may reduce the likelihood of social contagion of individual-referent PsyCap perceptions among team members, thereby creating greater dispersion of individual-referent PsyCap perceptions within the team.

Age diversity may be a further factor that might diminish *PsyCap strength.* Research has demonstrated that age diversity reduces consensus within teams regarding justice climate. It has been argued that this is because older and younger employees disagree in terms of what is fair (Colquitt et al., 2002). Age diversity may create greater dispersion among team members in relation to individual referent, as older employees may have a greater range of work experience and skills to drawn upon, which may in turn promote their individual-referent PsyCap (McMurray et al., 2010). In comparison, younger, less tenured employees may have fewer experiences to underlie their individual-referent perceptions of hope, efficacy, resilience and optimism; resulting in individual-referent PsyCap perceptions and thereby reducing the *PsyCap strength* of the team.

*Proposition 9: Team size and age diversity will be negatively related to individual-referent PsyCap strength.*

As proposed earlier, factors such as task interdependency and team cohesion may be particularly important for the emergence of *team PsyCap.* As such, these factors are also likely to predict *team PsyCap strength*. For instance, task interdependency requires team members to communicate about how they will work together towards their goals, overcome setbacks and their overall likelihood for success. Thus, task interdependence may promote social exchange among team members regarding the team’s ability and psychological resources, which in turn may facilitate *team PsyCap strength*. Team cohesion could also be related to *team PsyCap strength* as members of cohesive teams commit to and identify with the team readily. This unity among team members may contribute to similarity among members regarding the team’s psychological capacities (i.e. *team PsyCap strength*). Finally, team tenure may also predict *team PsyCap strength* as longer tenured teams can draw on vast experiences of planning for team goals, overcome challenges and achieved successes. These experiences may contribute to a shared sense of team PsyCap among team members, thus creating greater *team PsyCap strength*.

*Proposition 10: Team tenure, interdependency and cohesion will be positively related to team PsyCap strength.*

Although team consensus (strength) has been found to moderate relationships between justice climate level and team-level outcomes (Colquitt et al., 2002), to date the potential moderating effect of *PsyCap strength* or *team PsyCap strength* has not been explored. However, we suggest that moderating effects could be expected in relation to both *PsyCap strength* and *team PsyCap strength*. To demonstrate this, we will first consider collective PsyCap as operationalized using individual-referent PsyCap (e.g. *assimilated PsyCap*). Previous research has shown that *assimilated PsyCap* is positively related to team performance (Clapp-Smith et al., 2009; Peterson and Zhang, 2011). However, we suggest that this relationship could be moderated depending on the level of agreement among team members’ individual-referent PsyCap perceptions. Thus, when teams have high *PsyCap strength*, team members similarly perceive themselves as having the psychological capacities to enable them to effectively undertake their work role and contribute to the overall goals and performance of the team. However, when teams have low *PsyCap strength* only some team members perceive themselves as having adequate psychological capacities to effectively carry out their individual work duties and thus, contribute to the overall goals and performance of the team.

*Proposition 11: PsyCap strength will moderate the relationship between assimilated PsyCap and criterion variables.*

Similarly, we suggest that *team PsyCap strength* may moderate the relationship between *team PsyCap* and team performance. Consider a team with high within-group agreement regarding the team’s psychological capacities (e.g. high *team* *PsyCap strength*). In this case, the relationship between *team PsyCap* and performance may be strengthened,as virtually all team members perceive the overall team as possessing psychological capacities (hope, optimism, efficacy and resilience) enabling greater likelihood of the team achieving its goals. Conversely, lower *team PsyCap strength* reflects greater variance in members’ team PsyCap perceptions. This could potentially weaken the relationship between *team PsyCap* and performance, as only some team members perceive that the team has the necessary psychological capacities to achieve goals and succeed. This may reduce the overall motivational propensity of the team and thereby reduce team-level outcomes, such as performance.

*Proposition 12: Team PsyCap strength will moderate the relationship between team PsyCap and criterion variables.*

Importantly, by differentiating between *PsyCap strength* and *team PsyCap strength*, we can also consider the potential interplay between the two dispersion constructs. For instance, teams could have both high *PsyCap strength* and high *team PsyCap strength*. This would mean that virtually all team members similarly perceive themselves as having the motivational propensity to achieve their own individual goals, as well as perceiving that the team has the necessary psychological capacities (and thus, motivational propensity) to achieve overall team goals – thus, fostering optimal performance. Conversely, teams could have low *PsyCap strength* and low *team PsyCap strength*, reflecting variation in how team members perceive their own psychological capacities, as well as those of the overall team. These variations could reduce the potential effect of PsyCap on performance as only *some* team members perceive themselves and the team as having the necessary psychological capacities to achieve goals and tasks.

It may also be possible that teams have high *PsyCap strength*, but low *team PsyCap strength*. In this case team members would similarly perceive themselves as being hopeful, efficacious, resilient and optimistic, which could promote individual-level performances within the team. However, as only some team members perceive the team as having the necessary psychological capacities to achieve team goals (as reflected by low team PsyCap strength), overall team performance may be affected. Finally, teams may have high *team PsyCap strength*, but *low PsyCap strength*. In this case, team members similarly perceive the overall team as optimistic, resilience, efficacious and hopeful; but individual team members’ perceptions of their own psychological capacities would vary. This could subsequently impact team performance as only some members of the team would perceive themselves as having adequate psychological capacities to achieve their own individual work goals which in turn, contribute to the overall success of the team.

*Proposition 13: PsyCap strength and team PsyCap strength will interact to influence criterion variables.*

## Discussion

This paper makes a number of critical and valuable contributions to collective PsyCap literature. Most notably, it provides the first in-depth examination of theoretical foundations which may serve to explain the emergence of collective PsyCap. As such, it adheres to multilevel theory development guidelines which emphasize “careful explication of the phenomena of interest” (Kozlowski and Klein, 2000: 12) to reduce the risk for misspecified theory and measurement misalignment. Thus, we resisted temptation to commence empirical investigation of the criterion validity of collective PsyCap to instead focus on clearly specifying *what* the construct is, and *how, when, where* and *why* it may emerge in the first instance.

Extending from this we have presented a multilevel-multireferent framework of collective PsyCap which considers both referent and level of analysis and thus, fosters greater alignment between theory, conceptualization and operationalization. In presenting a new theoretical framework for collective PsyCap that draws on principles of social contagion, we have identified potential antecedent factors which may relate to the emergence of PsyCap at higher-levels. As such, we have conceptually commenced the development of a nomological network of collective PsyCap, focusing particularly on potential antecedents. This contribution is in alignment with multilevel theory development guidelines which stipulate that conceptualizations of constructs that emerge at higher levels need to theoretically specify the nature and form of these emergent processes (Kozlowski and Klein, 2000).

Although this paper affords critical steps in terms of to identifying potential antecedents of collective PsyCap, we acknowledge the need to also consider the probable interaction between antecedents and the impact this may have on the emergence of PsyCap at higher levels. For instance, we have proposed that team size may promote the emergence of team PsyCap as team members may perceive greater human capital for the team to draw upon when progressing towards team goals. However, at the same time team size may disrupt other potential antecedents of team PsyCap, such as team cohesion due to greater likelihood for relational loss in larger teams. In other words there may be an ‘optimal’ team size to promote the emergence of team PsyCap, after which point, team size may inhibit its emergence as it interacts with other antecedents (i.e. team cohesion and interdependency). In addition to identifying antecedents of each form of collective PsyCap further research attention must also be given to determining boundary conditions for antecedents related to the emergence of each form of collective PsyCap.

Thus, we have presented this multilevel-multireferent framework of collective PsyCap and related research propositions to serve as an initial foundation from which future conceptual and empirical collective PsyCap research can develop. We do not view our framework as an endpoint, but rather as an evolving multilevel model which will hopefully stimulate and guide future research. It should be acknowledged that given the infancy of collective PsyCap theory and research, we have chosen to only focus on those compositional models of aggregation that can be measured and analyzed. This is why we have not included Chan’s fifth model of composition, *process composition*, which attempts to explain the processes of change in behavioral acts or perceptions at higher levels (e.g. the processes by which an organization moves from a state of low agreement about safety climate perceptions to a state of high agreement; Chan, 1998: 241). However, as collective PsyCap research continues to grow, a more comprehensive nomological network of collective PsyCap will develop which can then inform more complex multilevel models, including process composition models.

We further acknowledge the propositions presented have developed from a new theoretical framework for collective PsyCap and empirical research is needed to substantiate them. Similarly, although we have proposed alternate forms of collective PsyCap, research aimed at investigating the validity of each of these is also needed. Specifically, discriminant validity between each of the proposed forms of collective PsyCap will need to be established in the first instance in order to demonstrate the utility of each form. Similarly, discriminant validity between *assimilated PsyCap* and *team PsyCap* and seemingly similar constructs such as climate and collective efficacy also needs to be established.

Further, despite research demonstrating the applied potential of PsyCap at the individual-level as evidenced by a recent meta-analysis (Avey et al., 2011), more studies are needed for a substantial body of literature regarding the outcomes of collective PsyCap. In particular, the criterion validity of each of the proposed forms of collective PsyCap should be examined to assess differential relationships with outcome variables. Comparative analyses of aggregation methods have been conducted within justice climate research (Wallace et al., 2013). This research showed that referent-shift consensus was a stronger predictor of performance-related outcomes than direct-consensus, while direct-consensus was a stronger predictor of job attitudes than referent-shift consensus.

## Implications and Future Directions

Several theoretical and practical implications stem from the introduction of a multilevel-multireferent framework of collective PsyCap (Table 3). We have provided definitions for five new forms of collective PsyCap (i.e. *summated PsyCap, assimilated PsyCap, team PsyCap,* *PsyCap strength and team PsyCap strength,* each founded in theory and aligned with an appropriate measurement strategy. This serves to reduce ambiguity and inaccurate interchangeability of terms in relation to the aggregation of PsyCap to higher levels apparent in previous research.

[*Insert Table 3 about here*]

Of greater practical significance the framework demonstrates innovative approaches to the conceptualization, operationalization and measurement of collective PsyCap. Importantly, the introduction of *summated PsyCap* and elaboration of *PsyCap strength* (to also consider *PsyCap team strength*) allows for the examination of PsyCap in teams where there is significant diversity in members’ perceptions of their own individual PsyCap or that of the team. By implementing *PsyCap strength* and *team PsyCap* *strength* researchers may be able to determine whether it is in fact necessary for all team members to be similar in their PsyCap perceptions in order to achieve the desired outcomes of collective PsyCap (i.e. enhanced team performance; Clapp-Smith et al., 2009; Peterson and Zhang, 2011). Alternatively, it may be possible to achieve desired outcomes when only particular members of a team have elevated PsyCap perceptions. Moreover, in the case of *summated PsyCap* the potential PsyCap of a team could be determined prior to a team being assembled. Thus, practitioners may be able to ‘hand pick’ team members so to maximize the psychological resource of the team.

In addition, by conceptually distinguishing between *assimilated PsyCap* and *team PsyCap* researchers can investigate the differential effects each of these forms of collective PsyCap on team outcomes. To date, team-level PsyCap research has been restricted to examining collective PsyCap as either an individual-referent (*assimilated PsyCap*; Clapp-Smith et al., 2009; Peterson et al., 2011) construct or a team-referent (*team PsyCap*; Vanno et al., 2014) construct. However, our framework positions *assimilated PsyCap* and *team PsyCap* as distinct constructs; each with different mechanisms of emergence. Each form may have unique effects on outcomes, or even interact to influence outcomes.

There is also opportunity for research to examine the potential cross-level effects each form of collective PsyCap has on individual-level outcomes. Although there is good evidence of significant relationships between individual-level PsyCap and individual-level outcomes such as performance, job satisfaction and turnover intent (Avey et al., 2011) research is yet to determine the cross-level influence of collective PsyCap on individual-level outcomes. According to the social information processing perspective (Salancik and Pfeffer, 1978), an important source of information for effective individual employee behavior and attitudes comes from the immediate work environment. Thus, belonging to a team with high positivity (i.e. high collective PsyCap) may have a positive bearing on individual-level performance and functioning. Future research should incorporate methods of analysis, such as within and between analysis (WABA, Dansereau and Yammarino, 2000) and random coefficient modeling (e.g. hierarchical linear modeling; Raudenbush, Bryk, Cheong, Congdon and du Toit, 2004) that allow investigation of potential cross-level effects of collective PsyCap (e.g. *assimilated PsyCap* and *team PsyCap*) on both team-level and individual-level outcomes.

By determining the degree to which each form of collective PsyCap influences team- and individual-level outcomes may also have important implications in terms of developing strategies to enhance collective PsyCap. Research has demonstrated that an individual-level PsyCap intervention is effective in terms of improving individuals’ PsyCap and subsequent job performance (Luthans et al., 2010). This intervention may also serve to bolster *assimilated PsyCap* within teams, as it is intended to enhance individuals’ own (self-referent) PsyCap. However, there may also be potential opportunity to develop training interventions aimed at bolstering *team PsyCap.* This type of intervention could adapt the goals and training exercises from the individual-level PsyCap intervention (Luthans, et al., 2010) so to encompass a team, rather than an individual focus and thereby aim to bolster team PsyCap.

Finally, in addition to investigating the multilevel theorizations proposed in this paper, consideration must be given to measurement issues associated with multidimensional constructs, such as PsyCap (regardless of the level of analysis). While certainly not unique to the construct of PsyCap, debate exists regarding the utility of multidimensional constructs relative to their individual components; in that they offer parsimony and generality, but often at the expense of measurement accuracy and specificity (Edwards, 2001). This issue as it relates to PsyCap has been discussed (Dawkins et al., 2013) and empirically demonstrated in regards to the criterion validity of PsyCap (Rego et al. 2012). Thus, to address issues inherently associated with multidimensional constructs, future research should strive to develop clearer classifications between PsyCap and its dimensions, implementing a taxonomy-based approach (e.g. Law, Wong & Mobley, 1998). Furthermore, integrative analytical approaches (Edwards, 2001) that incorporate PsyCap and its individual components (i.e. hope, efficacy, resilience and optimism) should also be considered to provide for a deeper understanding of the complexities and mechanisms of effect that underlie PsyCap.

**References**

Avey JB, Reichard RJ, Luthans F and Mharte KH (2011) Meta-analysis of the impact of positive psychological capital on employee attitudes, behaviors, and performance. *Human Resource Development Quarterly* 22(2): 127-152.

Avey JB, Wernsing TS and Luthans F (2008) Can positive employees help positive organizations change? Impact of psychological capital and emotions on relevant attitudes and behaviors. *Journal of Applied Behavioral Science* 44(1): 48-70.

Bandura A (1977) *Social Learning Theory*. Upper Saddle River, NJ: Prentice Hall.

Bandura A (1997) *Self-efficacy: The Exercise of Control*. New York: Freeman.

Bell ST (2007) Deep-level composition variables as predictors of team performance: A meta-analysis. *Journal of Applied Psychology* 92(3): 595-615.

Bliese PD and Jex SM (2002) Incorporating a multilevel perspective into occupational stress research: Theoretical, methodological, and practical implications. *Journal of Occupational Health Psychology* 7(3): 265-276.

Campion M A, Medsker GJ and Higgs AC (1993) Relations between work group characteristics and effectiveness: Implications for designing effective work groups. *Personnel Psychology* 46(4): 823-850.

Chan D (1998) Functional relations among constructs in the same content domain at different levels of analysis: A typology of composition models. *Journal of Applied Psychology* 83(2): 234-246.

Chou LF, Wang AC, Wang TY, Huang MP and Cheng BS (2008) Shared work values and team member effectiveness: The mediation of trustfulness and trustworthiness. *Human Relations* 61(12): 1713-1742.

Clapp-Smith R, Vogelgesang GR and Avey JB (2009) Authentic leadership and positive psychological capital: The mediating role of trust at the group level of analysis. *Journal of Leadership & Organizational Studies* 15(3): 227-240.

Cole MS, Bedeian, AG, Hirschfeld, RR and Vogel B (2011) Dispersion-composition models in multilevel research: A data-analytic framework. *Organizational Research Methods* 14(4): 718-734.

Colquitt J A, Noe RA and Jackson CL (2002) Justice in teams: Antecedents and consequences of procedural justice climate. *Personnel Psychology* 55(1): 83-109.

Dansereau F and Yammarino FJ (2000) Within and between analysis: The varient paradigm as an underlying approach to theory building and testing. In: Klein KJ, Kozlowski SWJ (eds) *Multilevel Theory, Research, and Methods in Organizations: Foundations, Extensions, and New Directions*. San Francisco, CA: Jossey-Bass, 425-466.

Dawkins S, Martin A, Scott J and Sanderson K (2013) Building on the positives: A psychometric review and critical analysis of the construct of Psychological Capital. *Journal of Occupational and Organizational Psychology* 86(3): 348-370.

Degoey P (2000) Contagious justice: Exploring the social construction of justice in organizations. *Research in Organizational Behavior* 22: 51-102.

de Jong A, de Ruyter and Wetzels M (2005) Antecedents and consequences of group potency: A study of self-managing service teams. *Management Science* 51(11): 1610-1625.

Edwards JR (2001) Multidimensional constructs in organizational behavior research: An integrative analytical framework. *Organizational Research Methods* 4: 144-192.

French, S. L. & Holden, T. Q. (2013). Positive organizational behavior: A buffer for bad news. *Business Communication Quarterly, 75*, 208-220.

Friedman TL (2005) *The World is Flat*. New York: Farrar, Straus and Giroux.

Gardner WL and Schermerhorn JR (2004) Unleashing individual potential: Performance gains through positive organizational behavior and authentic leadership. *Organizational Dynamics* 33(3): 270-281.

Gibbs PC and Cooper CL (2011) Fostering a positive organizational culture and climate in an economic downturn. In: Ashkanasy NM, Wilderom CPM and Peterson MF (eds) *The Handbook of Organizational Culture and Climate*. Thousand Oaks: Sage, 119-136.

Glassop LI (2002) The organizational benefit of teams. *Human Relations* 55(2): 225-249.

Goodman PS, Ravlin E and Schminke M (1987) Understanding groups in organizations. *Research in Organizational Behavior* 9: 121-173.

Gundlach M, Zivnuska S and Stoner J (2006) Understanding the relationship between individualism-collectivism and team performance through an integration of social identity theory and the social relations model. *Human Relations* 59(12): 1603-1632.

Guzzo RA, Yost PR, Campbell RJ and Shea GP (1993) Potency in groups: Articulating a construct. *British Journal of Social Psychology* 32(1): 87-106.

Hambrick DC and D'Aveni RA (1992) Top team deterioration as part of the downward spiral of large corporate bankruptcies. *Management Science* 38: 1445-1466.

Hatfield E, Capioppo JT and Rapson R L (1994) *Emotional Contagion*. Cambridge, England: Cambridge University Press.

James LR, Demaree RG and Wolf G (1984) Estimating within-group interrater reliability with and without response bias. *Journal of Applied Psychology* 90(1): 363-372.

Kozlowski SWJ and Klein KJ (2000) A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In: Klein KJ and Kozlowski SWJ (eds) *Multilevel Theory, Research, and Methods in Organizations: Foundations, Extensions, and New Directions*. San Francisco: Jossey-Bass, 3-90.

Krackhardt D and Porter LW (1985) When friends leave: A structural analysis of the relationship between turnover and stayers’ attitudes. *Administrative Science Quarterly* 30(2): 242-261.

Laughlin PR, Hatch EC, Silver JS and Boh L (2006) Groups perform better than the best individuals on letters-to-numbers problems: Effects of group size. *Journal of Personality and Social Psychology* 90(4): 644-651.

Law KS, Wong C and Mobley WH (1998) Toward a taxonomy of multidimensional constructs. *Academy of Management Review* 23: 741-755.

Li A, and Cropanzano R (2009) Fairness at the group level: Justice climate and intraunit justice climate. *Journal of Management* 35(3): 564-599.

Lindell MK and Brandt CJ (2000) Climate quality and climate consensus as mediators of the relationship between organizational antecedents and outcomes. *Journal of Applied Psychology* 85(3): 331-348.

Luthans F, Avey JB, Avolio BJ and Peterson S (2010) The development and resulting performance impact of positive psychological capital. *Human Resource Development Quarterly* 21(1): 41-66.

Luthans F and Avolio (2003) Authentic leadership development. In: Cameron KS, Dutton JE and Quinn RE (eds) *Positive Organizational Scholarship.* San Francisco, CA: Berrett-Koehler, 241–258.

Luthans F, Avolio BJ, Avey JB and Norman SM (2007) Positive psychological capital: Measurement and relationship with performance and satisfaction. *Personnel Psychology* 60(3): 541-572.

Luthans F, Norman SM, Avolio BJ and Avey JB (2008) The mediating role of psychological capital in the supportive organizational climate – employee performance relationship. *Journal of Organizational Behavior* 29: 219-238.

Luthans F, Youssef CM and Avolio BJ (2007) *Psychological Capital: Developing the Human Competitive Edge*. Oxford, UK: Oxford University Press.

Mathieu JE, Maynard MT, Rapp T and Gilson L (2008) Team effectiveness 1997-2007: A review of recent advancements and a glimpse into the future. *Journal of Management* 34(3): 410-476.

McKinney EH, Jr., Barker JR, Davis KJ and Smith DR (2005) How swift starting action teams get off the ground. *Management Communication Quarterly* 19(2): 198-237.

McMurray A J, Pirola-Merlo A, Sarros JC and Islam MM (2010) Leadership, climate, psychological capital, and wellbeing in a non-profit organization. *Leadership and Organization Development Journal* 31(5): 436-457.

Meindl JR (1995) The romance of leadership as a follower-centric theory: A social constructionist approach. *Leadership Quarterly* 6(3): 329-341.

Miller JG (1978) *Living Systems*. New York: McGraw-Hill.

Mischel LJ and Northcraft GB (1997) I think we can, I think we can: The role of efficacy beliefs in group and team effectiveness. In: Markovsky B, Lovaglia MJ and Lawler EJ (eds) *Advances in Group Processes* vol 14. Greenwich , CT: JAI Press, 177-197.

Mueller JS (2012) Why individuals in larger teams perform worse. *Organizational Behavior and Human Decision Processes* 117(1):111-124.

Newman A, Ucbasaran D, Zhu F and Hirst G (2014) Psychological capital: A review and synthesis. *Journal of Organizational Behavior* 35: S120-S138.

Oh H, Chung MH and Labianca G (2004) Group social capital and group effectiveness: The role of informal socializing ties. *Academy of Management Journal* 47(6): 860–875.

Ouweneel E, Le Blanc PM, Schaufeli WB and van Wijhe CI (2012) Good morning, good day: A diary study on positive emotions, hope and work engagement. *Human Relations* 65(9): 1129-1154.

Patterson MG, West MA, Shackleton VJ, Dawson JF, Lawthom R, Maitlis S, et al (2005) Validating the organizational climate measure: Links to managerial practices, productivity and innovation. *Journal of Organizational Behavior* 26(4): 379-408.

Perlow L and Weeks J (2002) Who’s helping whom? Layers of culture and workplace behavior. *Journal of Organizational Behavior* 23(4): 345–361.

Peterson S J and Zhang Z (2011) Examining the relationships between top management team psychological characteristics, transformational leadership, and business unit performance. In: Carpenter MA (ed.) *Handbook of Top Management Research.* New York City:  Edward Elgar Publishing, 127-149.

Raudenbush SW, Bryk AS, Cheong YF and Congdon R (2004) *HLM6: Hierarchical Linear and Nonlinear Modeling*. Lincolnwood, IL: Scientific Software International.

Rego A, Sousa F, Marques C and Cunha MP (2012) Authentic leadership promoting employees' psychological capital and creativity. *Journal of Business Research* 65(3): 429-437.

Roberson QM (2006) Justice in teams: The activation and role of sensemaking in the emergence of justice climates. *Organizational Behavior and Decision Making Processes* 100(2): 177-192.

Rupp DE, Bashshur MR and Liao H (2007) Justice climate: Consideration of source target, type, specificity and emergence. In: Dansereau FJ and Yamarino (eds) *Research in Multilevel Issues*. Oxford, UK: Elsevier, 439-459.

Salancik GR and Pfeffer J (1978) A social information processing approach to job attitudes and task design. *Administrative Science Quarterly* 23: 224-253.

Schippers MC, Den Hartog DN, Koopman PL and Wienk JA (2003) Reflexivity and diversity in teams: The moderating effects of outcome interdependence and group longevity. *Journal of Organizational Behavior* 24: 779–802.

Simon HA (1973) The organization of complex systems. In: Pattee HH (ed) *Hierarchy Theory*. New York: Braziller, 1-27.

Shamir B, House RJ and Arthur MB (1993) The motivational effects of charismatic leadership: A self concept based theory. *Organization Science* 4(4):577-593.

Sy T, Cote S and Saavedra R (2005) The contagious leader: Impact of leader’s mood on the mood of group members, group affective climate, and group processes. *Journal of Applied Psychology* 90(2):295-305.

Vanno V, Kaemkate W and Wongwanich S (2014) Relationships between academic performance, perceived group psychological capital, and positive psychological capital of Thai undergraduate students. *Procedia – Social and Behavioral Sciences* 116: 3226-3230.

Wallace JC, Edwards BD, Paul J, Burke M, Christian M and Eissa G (2013) Change the referent? A meta-analytic investigation of direct and referent-shift consensus models for organizational climate. *Journal of Management* 00: 1-24 (accessed 17 November 2013).

West BJ, Patera JL and Carsten MK (2009) Team level positivity: Investigating positive psychological capacities and team level outcomes. *Journal of Organizational Behavior* 30(2): 249-267.

Youssef CM and Luthans F (2011) Positive psychological capital in the workplace: Where we are and where we need to go. In: Sheldon KM, Kashdan TB, Steger MF (eds) *Designing Positive Psychology: Taking Stock and Moving Forward*. New York: Oxford University Press, 351-364.

Table 1

*Theoretical and empirical summary of extant collective PsyCap studies*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Study** | **Theoretical Framework** | **Conceptual Definition** | **Level of Measurement** | **Level of Analysis** |
| Clapp-Smith, Vogelgesang & Avey (2009) | Social Cognitive Theory and Social Contagion Theory (Bandura, 1977, 2001; Meindl, 1995) | NR | Direct Consensus Composition  PCQ – 24 items  **Example Items:**  *“I feel confident helping set targets/goals in my work area”* | Structural Equation Modeling |
| Peterson & Zhang (2011) | Collective Efficacy Theory (Bandura, 1997) | *“the team’s shared positive appraisal of their circumstances and probability for success under those circumstances based on their combined motivated effort and perseverance”* | Direct Consensus Composition  PCQ – 24 items  **Example Items:**  *“I feel confident helping set targets/goals in my work area”* | Hierarchical Regression |
| Vanno, Kaemkate & Wongwonich (2014) | Collective Efficacy Theory (Bandura, 1997) | NR | Referent Shift Composition  PCQ – 19 items  **Example Items:**  *“When assigned a project, my group always expect the best outcomes”* | Structural Equation Modeling |

*Notes:* E., Efficacy; NR., Not Reported; O., Optimism; PCQ., Psychological Capital Questionnaire (Luthans, Youssef, et al., 2007); R., Resiliency.

Table 2

*A summary of proposed alternate forms of collective PsyCap*

|  |  |  |
| --- | --- | --- |
| **Construct** | **Definition** | **Measurement** |
| Summated PsyCap | *The total sum of team members’ own (individual-referent) PsyCap.* | Additive Model |
| Assimilated PsyCap | *Agreement among team members in regards to their own (individual-referent) PsyCap.* | Direct Consensus Model |
| Team PsyCap | *Agreement among team members in regards to the team’s shared (team-referent) PsyCap.* | Referent Shift Consensus Model |
| PsyCap Strength | *The degree of dispersion among team members’ individual-referent PsyCap perceptions.* | Dispersion Model  (PsyCap as individual-referent) |
| Team PsyCap Strength | *The degree of dispersion among team members’ team-referent PsyCap perceptions.* | Dispersion Model  (PsyCap as team-referent) |

Table 3

*Potential antecedents, moderators and outcomes relating to each form of collective PsyCap and research and practice applications*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Potential**  **Antecedents** | **Form of Collective PsyCap** | **Moderators** | **Potential Outcomes^** | **Potential Research Contexts** | **Potential Practice Implications** |
| * Age * Positive Affect | *Summated PsyCap* | Team Size | **Individual-level:** Performance  Attitudes (organizational commitment, job satisfaction, turnover intent cynicism)  Behaviors (OCBs, absenteeism, job search behavior)  **Team-level:** Performance  Attitudes (satisfaction)  Behaviors (OCBs) | STATs  Virtual teams | Team selection  Recruitment |
| * Team Size * Leadership (authentic, transformational) * Outcome Interdependency * Positive Organizational Climate | *Assimilated PsyCap* | PsyCap Strength  Team PsyCap Strength | Newly formed teams  Small teams | Individual-level performance & functioning development  Team-level performance & functioning development |
| * Team Size * Leadership (authentic, transformational) * Task Interdependency * Team Cohesion * Team Tenure | *Team PsyCap* | PsyCap Strength  Team PsyCap Strength | Long-serving teams  Large teams  Interdependent teams | Individual-level performance & functioning development  Team-level performance & functioning development |

*Note* ^Listed potential outcomes have been derived from extant PsyCap research at the individual- and team-levels as summarized in recent reviews of PsyCap research (Avey et al., 2011; Dawkins et al., 2013; Newman et al., 2014)