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Organizational change agent influence: a conditional process model of key individual psychological resources

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ABSTRACT

Organizational change is a system-wide process that begins at the individual level. Individuals who act as catalysts for change are often referred to as "change agents" and are lower level employees rather than designated leaders. In the current study Conservation of Resources Theory (COR) is utilized to construct a conditional process model of key resources and change agent influence. Specifically, this model tests the direct effects of General Cognitive Ability (GCA), Five Factor Model (FFM) personality facets, and Psychological Capital (PsyCap) – as well as the mediating role of PsyCap – on simulated change agent performance. Results suggest PsyCap positively correlates with performance, and, mediates the relationship between GCA and performance. Related narrow FFM facets moderate both stages of the mediation. These findings provide theoretical implication for COR as well as practical implications for human resource development interventions geared towards identification and development of change agents.

An increasingly turbulent and competitive economic environment necessitates innovative change – a critical determinant of organizational competitiveness and survival (e.g. Zahra & Das, 1993). The effectiveness of individuals, often referred to as "change agents", to create change within organizations is an important component of success and is arguably as important as leadership (Barclay, 2009; Tichy, 1974). Fast-paced change emblematic of modern economic times requires voluntary actions of employees, working through informal networks, to effect rather than simply manage the change process (Kotter, 2012). In fact radical innovations are most likely to originate among employees lower in the organization, which requires these employees to act as change agents and enable subsequent adoption of innovation (Day, 1994). This has led to a view that lower and mid-level employees can and should act as primary agents of change (Caldwell, 2003). Researchers have called for a better understanding of change initiated by individuals at the bottom of the organization instead of the top (Piderit, 2000), however few studies have subsequently been conducted (e.g. Mars, 2009). The phenomenon of emergent organizational change, or change that often originates at mid- and lower levels of the organization, has received attention in recent years (Chia, 2014; Greenwood & Hinings, 1996; Plowman et al., 2007).

The current study seeks to understand the psychological resources of individuals who are able to generate such change.

The change agent has been described as someone who, during a planned deliberate effort to improve the organization, acts to help bring about system-wide change (Beckhard, 1969; Kendra & Taplin, 2004; Lippitt, Watson, & Westley, 1958). The classification of change agent has long been defined as a heterogeneous group depending on the specific task and approach of the individual (Bennis, 1969). Qualitative and empirical investigations have sought to classify agents based on common characteristics such as the primary activity (e.g. Havelock & Havelock, 1973; Tichy & Hornstein, 1976) or role of the individual (e.g. Sashkin, Morris, & Horst, 1973). And while there have been at least several dozen studies of this type (see Ottaway, 1983) it appears that the role, task, and individual characteristics of change agents can vary widely and also depend on the stage of organizational change. Given the context-specific nature of change processes, these employees are required to possess general competencies that have universal application. In fact, results of previous studies provide a relatively unremarkable list of general competencies associated with learning, changing, adapting, and problem-solving (Caldwell, 2003).

There is an abundant literature on change at the system-level. However research on individual, or micro-level, aspects of organizational change is less abundant. Of research on the individual psychology of organizational change (see Oreg, Michel, & Todnem, 2013), most micro-level studies have examined employee coping or attitudinal reactions to the change process (e.g. Avey, Wernsing, & Luthans, 2008; Caldwell, Herold, & Fedor, 2004; Jimmieson, Peach, & White, 2008; Judge, Thoresen, Pucik, & Welbourne, 1999; Oreg, Vakola, & Armenakis, 2011; Shin, Taylor, & Seo, 2012; Wanberg & Banas, 2000; see Vakola, Armenakis, & Oreg, 2013 for review) rather than the individual capacity of employees to initiate organizational change (Nikolaou, Gouras, Vakola, & Bourantas, 2007). In the current study the individual psychological resources related to change agent performance are examined. This study applies Conservation of Resources (COR) (Hobfoll, 1989, 2002) theory to understand the link between key psychological resources and change-related performance. More specifically, a conditional process model is developed to understand the acquisition and application of key psychological resources (Hobfoll, 2002). This model should compliment existing literature on selection (see Kehoe, 2000), development (e.g. Ghitulescu, 2013; Sonenshein, Dutton, Grant, Spreitzer, & Sutcliffe, 2013), and subsequent placement of employees – specifically change agents – during times of organizational change.

Each participant in the current study attempted to implement proactive change in a simulated environment. The participant needed to identify coworkers who are supportive of change, those who are likely to resist, and then effectively create awareness, enhance dissatisfaction with the status quo, and provide information and interventions that facilitate adoption of change. A critical mass of adopters (Frohman, 1984) is the criterion for success in the current study and the basis of the simulation performance, or influence, criterion. Participants must act as change agents and influence a critical mass of individuals to become adopters of the change initiative. Most of the literature and empirical work on change efforts emphasize the importance of effective leadership. However it is important to consider the abilities and behaviours required of individual change agents, including lower level employees, to effect change (Kotter, 1997). Therefore in the current study

participants, assuming the simulated role of mid-level manager, act as change agents who must influence stakeholders to adopt a change initiative.

Theoretical Background

In the current study individual psychological resources of the change agent are examined. While specific skills necessary for change-related performance may not be applicable across all contexts, there are key psychological resources that should serve one well regardless of context. For example, cognitive ability, motivation, and resilience would likely be assets across a broad range of situations. Likewise, the primary focus of the current study is to understand these resources as they relate to the individual's ability to effect, rather than simply adapt to, organizational change (van Dam, 2013).

Psychological resource theories are based on the premise that there are entities (i.e. resources) that are either valued in their own right or act as a means to obtain valued ends. While some resource theorists and researchers (e.g. Witt & Carlson, 2006; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009) have examined specific resources (e.g. efficacy, control), there has been a shift towards more integrative resource models. Integrated models are particularly useful because resources are conceptualized broadly rather than simply focusing on one resource, and, variation in resources is proposed as a fundamental operating mechanism by which positive outcomes are influenced (Hobfoll, 2002). Therefore integrative models define a causal process rather than mere classification of resources. In fact there has been a recent shift in the literature from examining the fit between resource and setting towards understanding the dynamic process between individuals and settings that alter and transform resources (Hobfoll, 2010).

COR is an integrative resource theory that offers broad application to numerous domains of human behaviour, such as well-being, motivation, and performance. It also offers specific testable assumptions about the way in which resources are defined, obtained, transformed, and utilized. The dynamic framework of COR is particularly salient to change agents, who must mobilize psychological capabilities to act, react, and adapt during the dynamic process that is definitive of change initiatives (Ghitulescu, 2013; van Dam, 2013).

COR theory

COR theory (Hobfoll, 1989, 2002) involves seven central postulates. First, individuals strive to obtain, retain, and protect entities (psychological entities in the current study) that are either a benefit in their own right or function as a means to obtained valued benefits. Second, individuals with resources are more equipped to position themselves for additional positive experiences, thereby being less likely to experience resource-threatening situations. Third, individuals who possess resources are more capable of solving problems inherent in demanding situations. Fourth, individuals endowed with more resources are less susceptible to negative effects of resource depletion, wherein they are better able to absorb loss or call on other resources. Fifth, resources are linked such that those with a breadth of resources are more likely to accrue other resources. In other words, resources are likely to be experienced in bundles rather than a single positive resource alone. The sixth assumption is that the positive influence of resources is

consistent across time and context. Finally, the seventh assumption is that resources are a benefit in and of themselves such that resource rich individuals are viewed favourably by themselves and others.

Specific COR theory resources are defined as objects, personal characteristics, conditions, or energies (Hobfoll, 1989) that vary by both source and volatility (ten Brummelhuis & Bakker, 2012). For example, cognitive ability and resilience have been identified as important individual resources during organizational change (van Dam, 2013), yet the former is less volatile (or malleable) than the later. The issue of source and volatility is important when considering that key resources have been identified as those that facilitate acquisition, alteration, and application of other resources (Hobfoll, 2002). Thus, the current study offers an empirical assessment of the interplay between stable and malleable key personal (i.e. psychological) resources, or, the way key psychological resources interact in terms of acquisition, alteration, and application.

Organizational change (van den Heuvel, Demerouti, Bakker, & Schaufeli, 2013) and psychology (Gorglevski, Halbesleben, & Bakker, 2011) COR studies have typically examined constructs that enable employees to adapt to or manage stressful experiences. Only recently has COR theory has been used to understand the direct and indirect effects of key resources on employee performance (e.g. Witt & Carlson, 2006; Xanthopoulou et al., 2009). Specifically, personal psychological state resources of self-esteem, self-efficacy, and optimism are key resources that act as antecedents of higher engagement and performance (Xanthopoulou et al., 2009). Positive psychological states and dispositions broaden individual thought and action, which in turn builds enduring psychological resources that are then used to enhance performance (Fredrickson, 2001). Therefore the current study extends findings of COR direct and indirect effects on performance to that of change agent performance. More specifically, positive state-like constructs examined in the current study include efficacy, optimism, hope, and resilience. Whereas more stable personality variables hypothesized to contribute to (i.e. achievement striving, assertiveness) and detract from (i.e. vulnerability, depression) psychological resources during change are also examined.

Psychological Capital

Psychological Capital (PsyCap) is an exemplar resource in terms of fitting the postulates of COR theory. PsyCap is characterized as (a) confidence in one's ability to strive to succeed at challenging tasks, (b) making positive attributions about succeeding now and in the future, (c) the combination of perseverance and the inclination to redirect one's course of action towards goals in order to succeed, and (d) the tendency to display resilience in the face of adversity. Thus, PsyCap is a combination of efficacy, optimism, hope, and resilience (Luthans, Avolio, & Youseff, 2007). In accord with COR theory, PsyCap is beneficial and functions as a means to beneficial outcomes (Luthans, Avolio, Avey, & Norman, 2007) (Postulate 1), enables individuals to position themselves positively in relation to resources (Chen & Lim, 2012) (Postulate 2), enhances ability to solve problems (Luthans, Youssef, & Rawski, 2011) (Postulate 3), decreases susceptibility to resource drains (Cheung, Tang, & Tang, 2011) (Postulate 4), is composed of highly interrelated characteristics that constitute a "resource caravan" (Hobfoll, 2002) (Postulate 5), exhibits a positive influence across time and context (Avey, Wernsing, & Mhatre, 2011) (Postulate 6), and provides a favourable view of oneself (Culbertson, Fullagar, & Mills, 2010) (Postulate 7).

Fortunately PsyCap has been shown to be amenable to enhancement as a result of individual development (Avolio & Luthans, 2006; Luthans & Avolio, 2003; Luthans, Avey, Avolio, Norman, & Combs, 2006) and therefore should extend well to the training of change agents (Ghitulescu, 2013; Sonenshein et al., 2013). PsyCap is arguably much more responsive to development than psychological constructs that have been shown to be quite stable over time, such as cognitive ability (Lyons et al., 2009) and broad bandwidth personality traits (McCrae & Costa, 1997). When examining psychological constructs, Luthans, Avolio, Avey, et al. (2007) conceived of a scale of consistency, from state, to state-like, to trait-like, and finally to trait, which are ordered in terms of increasing stability (or less volatility). Therefore cognitive ability and personality being more stable over time than PsyCap and other attitudes (Conley, 1984, p. 11). PsyCap is largely self-opinion and as such is state-like. It is not as temporary as a state, but it is less stable than cognitive ability and personality. Therefore PsyCap has subsequently been studied, and utilized as, a state-like disposition (Luthans, Avolio, Avey, et al., 2007). Finally, this composite four facet construct is central to the current study because it is an antecedent of job performance and job satisfaction even above and beyond important personality traits (Luthans, Avolio, Avey, et al., 2007), as well as positive attitudes towards change (Avey et al., 2008).

PsyCap is positively related to job performance (Avey, Wernsing, et al., 2011) and job satisfaction, and, predicts job performance over and above personality alone (Luthans, Avolio, Avey, et al., 2007). Before evidence was found to support the higher order PsyCap construct, individual facets were shown to have strong positive relationships with work performance (Stajkovic & Luthans, 1998) as well as act as antecedents of many other positive individual outcomes such as task effort, persistence, problem-solving, and self-control (Bandura, 1986; Gist & Mitchell, 1992). Whereas the only previous study of PsyCap and organizational change shows a correlation of PsyCap and positive change attitudes (Avey et al., 2008), the current study examines the relationship of PsyCap with change agent performance. In the current study participants complete a simulated series of decision-making tasks that provide immediate feedback of success or failure, requiring them to effectively react to and learn from their decisions. More specifically, participants must choose between more than a dozen different interventions to influence employees and the success of the implementation depends on the current credibility rating of the participant, the disruptiveness of the intervention, and the current stage of organizational change. Once an intervention has been chosen the respondent is provided brief feedback with the effect of their decision – garnering more adopters, creating more resisters, or having no effect at all. The respondent must learn from their decision-making and alter their individual strategy accordingly. The simulation requires adaptive problem-solving on the part of the respondent and therefore confidence in one's ability, optimism about subsequent events, and perseverance and resilience in the face of initial setbacks, will increase the likelihood of success. In short, PsyCap (i.e. self-efficacy, optimism, resiliency, hope) should serve as a key resource for performance in the simulation.

However there are few, if any, integrative models of well-understood trait or trait-like constructs and PsyCap. In the current study an attempt is made to understand the interaction between these constructs. A conditional process model of cognitive ability, personality, PsyCap, and simulated change-related performance is developed and tested.

A conditional process model of psychological resources

Key resources have been identified as specific types that facilitate acquisition, alteration, and application of other resources (Hobfoll, 2002). The current study is concerned with psychological characteristics so the focus is on key personal resources. Individual psychological resources in particular vary in terms of stability across time. PsyCap is a state-like entity and therefore less stable across time, whereas stable individual differences (i.e. cognitive ability, personality traits) should impact the acquisition and deployment of PsyCap.

Cognitive ability

The link between General Cognitive Ability (GCA), as it has been referred to in the literature, has received widespread empirical support as an antecedent of numerous types of job and work performance (see Schmidt, 2002). GCA is a broad dimension of intellectual functioning that generalizes across many domains (e.g. Hunter, 1983; Hunter & Hunter, 1984), as opposed to more specific forms of intelligence (e.g. spatial, visual processing). The positive relationship between GCA and work outcomes is supported by numerous meta-analyses across job types, occupations, and countries (Bertua, Anderson, & Salgado, 2005; Hunter, 1983; Hunter, 1986; Hunter & Hunter, 1984; Hülsheger, Maier, & Stumpp, 2007; Salgado, Anderson, Moscoso, Bertua, & De Fruyt, 2003). Likewise, GCA appears to be an important resource during times of organizational change, wherein it is associated with successful adaptation to both changing work demands (Le Pine, Colquitt, & Erez, 2000) and roles (Niessen, Binnewies, & Rank, 2010). One theoretical argument for the strong link between GCA and performance is that individuals with higher GCA are better able to acquire new information and adapt to new job-related demands (van Dam, 2013), which explains previous empirical research in training success and job performance (Hunter, 1986; Jensen, 1986; Schmidt, Ones, & Hunter, 1992). While general mental ability is perhaps an intuitive predictor of performance, including change agent performance in the current study, it is the intent of the current study to more clearly specify how GCA fits into the conditional process of key resource acquisition.

PsyCap, a bundle of state-like key resources, is acquired at least in part by one's ability. Higher levels of ability (GCA in the current study) are likely to lead to successful experiences in life, which are then followed by positive self-evaluation. Within the COR theory framework cognitive ability would be seen as a key personal resource, which enables one to have more positive and successful performance at work. These work experiences are "raw" resources that, when experienced by the individual, are transformed into "evaluated" resources such as positive self-regard, satisfaction, and self-esteem (Hobfoll, 1988). Some resources are particularly effective at producing a "gain spiral", wherein a positive resource enables acquisition of additional positive resources. Self-efficacy is one such example, because successful employees tend to experience higher self-efficacy, which will in turn produce higher goal directed behaviour, which in turn leads to higher likelihood of success. Empirical evidence confirms that efficacy acts as a mediator such that cognitive ability predicts higher efficacy, which in turn predicts high job and task performance (Chen, Casper, & Cortina, 2001; Judge, Jackson, Shaw, Scott, & Rich, 2007). This is likely to be the case with other positive attitudes in general and therefore the current study extends this mediation effect to PsyCap. Specifically, higher GCA is associated with more optimism, hope, and resilience, as well as efficacy, which are positively related to

performance. In the current study this line of reasoning is used to assess the mediating effect of PsyCap (Figure 1). GCA is expected to be an antecedent of PsyCap, which in turn is an antecedent of change agent influence. More specifically, GCA will be positively related to participant ability to more efficiently influence adopters in the simulation. However GCA will also have a conditional indirect effect through PsyCap on performance. PsyCap serves to amplify GCA's positive effect on performance.

Finally, general GCA is largely predetermined (Deary, Whalley, Lemmon, Crawford, & Starr, 2000) and is more consistent over one's life-span (Lyons et al., 2009). Therefore in relation to personality traits and PsyCap it is a more stable antecedent of performance in life and during times of change at work. Therefore, cognitive ability should be modelled as an exogenous key personal resource when predicting change agent performance.

> Hypothesis 1. PsyCap will mediate the relationship between GCA and change agent perform-
> ance (defined as number of adopters achieved),

Personality

The renaissance in research and practitioner usage of personality instruments to predict job performance and other individual outcomes since the 1980s is attributable in large part to the use of psychometrically sound taxonomies – the most favoured of which is the Five Factor Model (FFM), which includes the broad constructs of Conscientiousness, Extraversion, Agreeableness, Openness to Experience, and Emotional Stability or Neuroticism – each of which has related narrow sub-facets (e.g. Barrick & Mount, 1991). There have been numerous published meta-analytic studies in the last several decades, all of which support the predictive validity of the FFM in one-way or another (Barrick & Mount, 1991; Barrick, Mount, & Judge, 2001; Salgado, 1997; Tett, Jackson, & Rothstein, 1991). The predictive validity of the FFM has been evidenced across multiple types of performance, jobs, and occupations. The effect is even larger when facets, or sub-scales within each factor, are more precisely matched with criteria (e.g. Dudley, Orvis, Lebiecki, & Cortina, 2006).

The increased validity of narrow over broad traits has been previously debated as the bandwidth-fidelity dilemma (see Cronbach & Gleser, 1965; Hogan & Roberts, 1996). Therefore relevant narrow facets of the FFM are assessed in the current study (McCrae & Costa, 1987, 1997). This is done for several reasons; to heed the call of previous researchers to use
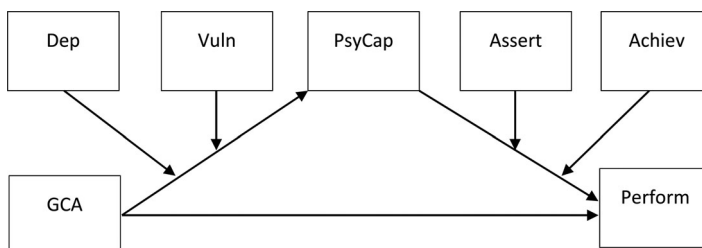
Figure 1. Conditional process model of key individual resources. Note: key individual resources are abbreviated in the figure as follows: GCA: General Cognitive Ability; Dep: depression; Vuln: vulnerability; PsyCap: Psychological Capital; Assert: assertiveness; Achieve: achievement orientation; Perform: Performance.

facet level antecedents and criteria (Barrick et al., 2001), avoid attenuated validity due to broad (i.e. trait) versus narrow (i.e. trait facet) bandwidth, and more accurately match antecedents with theoretically linked processes.

Aside from leadership studies (Judge et al., 1999), those studies that have examined individual personality as it relates to organizational change have focused on individual attitudinal reactions to change (Avey et al., 2008; Oreg, 2006) as well as the influence of personality on coping with change (Judge et al., 1999; Lau & Woodman, 1995). Many of these studies have used a narrow-bandwidth (or facet level) approach (see Oreg et al., 2011 for review). These narrowly specified personality constructs include, for example, tolerance for ambiguity (e.g. Ashford, 1988; Walker, Armenakis, & Bernerth, 2007), trait-based resilience (Tugade & Fredrickson, 2004; Tugade, Fredrickson, & Feldman-Barrett, 2004), dispositional resistance to change (Oreg, 2003, 2006), and personal control (Fugate, Kinicki, & Prussia, 2008). The commonality of these constructs is that they are central to one's ability to regulate positive psychological emotional experience. The current study builds on this line of research by assessing the trait regulation of positive emotion as it relates to ability to influence organizational change, rather than simply tolerate or cope with it.

One study (Nikolaou et al., 2007) has explored the role of personality as a predictor of change agent performance, wherein traits related to emotion regulation (i.e. locus of control, neuroticism, generalized self-efficacy, and self-esteem) positively correlated with overall change management skills in a simulated environment. The current study builds on this literature (i.e. Nikolaou et al., 2007) by (a) specifically matching key personality facets with change agent influence, and (b) examining the role of these emotion regulation facets in the conditional process model of cognitive ability, positive emotional experience (i.e. PsyCap), and change agent performance.

Role of personality in PsyCap acquisition

Higher levels of ability lead to greater successes, which lead to a more positive outlook (e.g. efficacy), which then increases the likelihood of future success – thereby producing a "gain spiral" of psychological resources (Hobfoll, 1988). A fundamental assumption of the link between ability (GCA in the current study) and positive outlook (PsyCap in the current study) is the accurate evaluation of one's own ability. Specifically, the raw resources obtained by virtue of one's own ability must be transformed into evaluated resources by a cognitive process. If this cognitive process is negatively biased then resources will be less useful. Specifically, positive outlook (e.g. self-efficacy, readiness for change) is an antecedent of employee ability to manage situations and succeed during times of organizational change (Ashford, 1988; Cunningham et al., 2002; Holt, Armenakis, Feild, & Harris, 2007). However in order for positive outlook to result from successful change one must accurately perceive oneself as being instrumental. If one perceives success purely as chance then important change-related psychological resources such as positive outlook, positive emotion, esteem, and efficacy are unlikely to be aided by success.

A positive, or optimistic, disposition seems to increase the likelihood that one will develop multiple positive moods and behaviour (Taylor & Brown, 1988). Conversely, a dispositional negative outlook provides a lens through which one filters life experiences, which ultimately leads to disproportionately more negative appraisals of oneself and situation. This appraisal process works by way of information processing as well as attribution.

Previous research has shown that depressed individuals employ a dysfunctional cognitive schema that manifests in the misperception and misinterpretation of events, thereby tailoring the interpretation of events to fit one's negative conclusions (Beck, 1967, 1976). This is coupled with a tendency to attribute negative conclusions to one's own stable internal, rather than external, characteristics (Abramson, Seligman, & Teasdale, 1978). Thus, by way of information processing and attribution depressed individuals recall more negative information, make more negative self-evaluations, and attribute failures to internal rather than external characteristics (Coyne & Gotlib, 1983).

The recall of positive events (i.e. successes), as well as the subsequent internal causal attribution of one's successes, is critical for developing key psychological resources related to positive outlook. An employee may possess native ability, talent, or cognitive capacity to influence stakeholders and facilitate organizational change. However vulnerable and depressive tendencies increase the likelihood that individuals react to situations with hopelessness, discouragement, dejection, and poor coping mechanisms (Costa & McCrae, 1992b). The reactance to difficulties and self-defeating information processing is hypothesized to be similar, albeit to a far lesser degree, to the aforementioned depressive attribution process (Abramson et al., 1978; Coyne & Gotlib, 1983). Therefore these personality facets will temper the psychological resource-gains provided by one's successful change efforts. This provides a boundary condition for the COR theory postulate that resources are a means by which one enriches oneself with additional resources (Hobfoll, 2002). In fact, the cognitive processing and attribution process is essentially immediate (Hollon & Kendall, 1980). Therefore negative disposition will moderate resource acquisition during even short periods of change agent performance as long as the episode contains an iterative (e.g. computer adaptive problem set) task and provides feedback, wherein individuals must make causal attributions regarding the success of one's own decisions. Therefore the effect on resource acquisition will be present in both short and long-term domains of change performance.

Therefore, while cognitive ability predicts positive self-evaluation of one's ability (Chen et al., 2001; Judge et al., 2007), it is hypothesized that traits associated with negative outlook are likely to temper this relationship, as shown in Figure 1. The FFM facets most clearly associated with depressive symptoms include depression (a tendency to experience feelings of guilt, sadness, despondency, and loneliness) as well as vulnerability (a general susceptibility to stress).

> Hypothesis 2a. Depression will moderate the first stage mediation of PsyCap between GCA and change agent performance (defined as number of adopters achieved), such the relationship between cognitive ability and PsyCap will be weaker when depression is high.

> Hypothesis 2b. Vulnerability will moderate the first stage mediation of PsyCap between GCA and change agent performance (defined as number of adopters achieved), such the relationship between cognitive ability and PsyCap will be weaker when vulnerability is high.

Role of personality in PsyCap application

The originators of PsyCap note the overlap of the term capital with common usage in economic and financial fields, and analogical use for concepts such as human and intellectual constructs. They are clear that this is a construct that is developed over time, via psychic investment, with the goal of increasing the likelihood of future benefit

(Luthans, Avolio, Avey, et al., 2007). COR theory proposes that individuals are motivated to obtain, retain, and protect resources. In short, acquiring and facilitating the use of key resources are central motives of individual behaviour (Hobfoll, 1989).

The trait of conscientiousness is a personal resource and is related to a variety of job-related performance dimensions (Barrick et al., 2001), including attitudes and behaviours during organizational change (Hornung & Rousseau, 2007; Rafferty & Griffin, 2006). However conscientiousness also plays a boundary-setting role by way of resource regulation (Kanfer & Heggestad, 1997, 1999). Specifically, conscientiousness acts to regulate deployment of personal resources. Conscientious employees, for example, experience less work–family conflict when they are highly engaged in work (Grandey & Cropanzano, 1999) and display an attenuated relationship between neuroticism and burnout when work demands are high (Perry, Penney, & Witt, 2007). Likewise, self-regulation mediates the relationship between conscientiousness and performance (Bidjerano & Dai, 2007). These results suggest that conscientiousness serves as control mechanism by which individuals manage valuable key psychological resources, choosing to dispense of resources only when it is more advantageous towards creating organizational change or mobilizing additional change-related resources.

However, conscientiousness is a broad personality construct composed of more narrow facets (McCrae & Costa, 1987, 1997) related to behaviour regulation and therefore should be considered at the facet level that is specific to the particular criterion – simulated change agent performance in the current study. Achievement orientation is an approach-oriented trait that serves to regulate motivation and is one of the most common facets of most measures of conscientiousness (Kanfer & Heggestad, 1997, 1999). It encompasses one's propensity to expend resources in order to be successful. As an example, this is unlike the facet of deliberation that involves the thoughtful deliberation before acting. Deliberation, therefore, would be most relevant in situations where individuals must manage key personal resources over a long period of time, consistently determining the best investment of valuable resources. In competitive tasks of shorter duration that require individuals to act assertively to be successful it is a facet like achievement orientation, not deliberation, which will moderate the relationship of key resources to performance. In these tasks individuals who are most competitive and dominant will strive to win at higher rates, with less regard towards how hopeful or efficacious they may feel. Therefore achievement striving, which refers to the individual disposition for high levels of aspiration and innate drive to succeed (Costa & McCrae, 1992a), will interact with PsyCap.

In the current study PsyCap is hypothesized to interact with achievement striving (a facet of conscientiousness) in the prediction of simulated change agent performance such that this achievement orientation (Stewart, 1999) is likely to attenuate the effect of PsyCap.

> Hypothesis 3a. Achievement striving will moderate the second stage mediation of PsyCap between GCA and change agent performance (defined as number of adopters achieved), such the relationship between PsyCap and simulation performance will be weaker when achievement striving is high.

The logic that approach-oriented and appetitive traits weaken PsyCap should be extended to other facets that are subsumed by other broadband FFM traits. Therefore PsyCap is also hypothesized to interact with assertiveness (a facet of extraversion) in

the prediction of simulated change agent influence, as shown in Figure 1. Traits that produce a tendency towards action and pursuit of goals are likely to override similar state-like tendencies. Wherein when one has a high degree of social ascendency and a disposition towards being forceful in their expression and behaviour it is likely that belief in the effectiveness of one's behaviour (e.g. efficacy) becomes less relevant. Like those individuals who are high in achievement striving, those individuals high in assertiveness are expected to persist in this iterative decision-making simulation even in lieu of setbacks. Specifically, high levels of assertiveness in the current study defines those individuals who are dominant, forceful, and socially ascendant (Costa & McCrae, 1992a) and therefore assertiveness should attenuate the effect of PsyCap on change simulation performance.

> Hypothesis 3b. Assertiveness will moderate the second stage mediation of PsyCap between GCA and change agent performance (defined as number of adopters achieved), such the relationship between PsyCap and simulation performance will be weaker when assertiveness is high.

Method

Participants and procedure

Participants

Participants were undergraduate business administration majors in the northwestern United States. After removing respondents who failed validity items (6) a total of 166 participants, 95 male and 71 female were included in the study. The mean age was 22.29, with ages ranging from 19 to 45. Participants completed the cognitive ability assessment and computer simulation in separate proctored settings. The personality and state-like assessments were completed online and at separate times to control for method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Each assessment was completed separately and in the temporal order specified in the conditional model. All participants completed the cognitive ability assessment 12 weeks prior to the computer simulation. Personality assessments were completed four weeks prior to the simulation and a measure of PsyCap was completed the day prior to the computer simulation.

Computer simulation

The computer simulation is Harvard Business Publishing's *Change management simulation: Power and influence*. The software is accompanied by a lengthy description of the theoretical underpinnings (briefly reviewed below) and performance criteria used in the design of the simulation (Judge & Hill, 2010). The simulation is designed to provide experiential learning with a direct link to theory and practice. Participants were assigned the role of Director of Product Innovations, at a sunglass company, whose task it is to propose a sustainability initiative and garner a critical mass of supporters to successfully implement organizational change, or specifically, organization-wide support for the initiative. It was the change agent's task to move individual employees through four stages of individual change, including (1) awareness, (2) interest, (3) trial, and (4) adoption. The number of individuals in various stages of individual change dictated the stage of change the organization was undergoing. Organizational change has often been described as a three-stage

process where individuals are motivated to change, followed by development of new attitudes and behaviours, and finally stabilization of change (Armenakis & Bedeian, 1999; Lewin, 1947; Schein, 1980). Therefore in the simulation organizational change at the system-level transitions through three stages, including mobilization, movement, and sustain. The participant must decide on the appropriate action (or "change lever"), the timing to deploy specific actions (each action requires one week of activity), and the target(s) of the action.

Receptivity of change target(s) depends, in part, on their individual differences (Oreg, 2003). Therefore the participant is provided a biographical sketch of each employee, or change target, and is able to discern differences in terms of openness to change, individual perceptions of the costs and benefits of a particular change, and how social networks dispose targets towards the change efforts (as well as the indirect impact of moving a change target through the four stages of individual change). In accord with Diffusion of Innovation Theory (Rogers & Shoemaker, 1971) each change target is initially classified as one of four types of resister, "Early Adopter", "Early Majority", "Late Majority", and "Resister". Status is unknown to the participant, but they are able to discern status-based on biographical sketches. Finally, individual receptivity towards change is influenced by the attitudes of others in their professional and social networks (Mohrman, Ramkrishnan, & Mohrman, 2003; Stebbins & Braganza, 2009). This creates a multiplier effect wherein success or failure in influencing a change target will have an influence on that target's professional and social network. In order to simulate the effect of social networks on change each change target is connected with between 1 to 9 coworkers and 1 to 2 social relationships with coworkers. The participant must analyse these connections before deciding on what actions to implement and who to target. Feedback regarding the success or failure of a chosen intervention, as well as the relationship with individual and system-wide change adoption is provided in real-time. Therefore the simulation engenders both cognitive and emotional components in that individual must react to, and learn from, successes and failures as the simulation progresses.

Participants were told one week prior that they would be participating in a computer simulation-related to the topic of organizational change. Participants were not briefed on the simulation until the actual day of participation, wherein they were provided with a handout explaining the scenario and their role. The experimenter then played several tutorial videos on how to access and navigate the simulation, as well as how real-time feedback would be presented, and their ultimate goal during the simulation. They were informed that their grade would not be influenced by participation and were not required to participate, but that at the end of the session the performance results would be shared with the entire class and participants would be displayed in rank-order. The voluntary and public nature of study participation was assumed to leverage the motivational principles of consistency and social validation (Cialdini, 2001).

Measures

Wonderlic contemporary cognitive ability test

GCA was assessed via a composite score offered by one of the most widely used cognitive-based personnel selection tests. This is a 12 minute timed, 50 item, computer adaptive test designed to quickly and efficiently assess one's GCA. The assessment displays a high

internal consistency (alpha ranging from 0.89 to 0.91) and adequate predictive validity across jobs (ranging from 0.22 to 0.67 depending job type and outcome measure) (Wonderlic, 2007).

Neo personality inventory – revised (NeO pl-R)

The NEO PI-R, a 240 item self-report questionnaire measure of the FFM, provides a systematic assessment of emotional, interpersonal, experiential, attitudinal, and motivational styles. The NEO PI-R is a measure of the five major domains of personality, as well as the six traits, sub-scales, or facets that define each domain. The five factor scales and 30 sub-factor scales provide a comprehensive and detailed assessment of normal adult personality. It is a well-researched assessment that measures respondent self-reported personality (Costa & McCrae, 1992a). In the current study the personality facets of depression (alpha = 0.84), vulnerability (alpha = 0.80), assertiveness (alpha = 0.84), and achievement striving (alpha = 0.82) show high internal consistency, as shown in Table 1.

Psychological Capital

The state-like disposition of PsyCap was assessed by self-report survey (Luthans, Avolio, & Youseff, 2007) (alpha = 0.91). Sub-facets of this scale include efficacy (alpha = 0.78), optimism (alpha = 0.71), hope (alpha = 0.84), and resilience (alpha = 0.73), all of which displayed a high level of reliability. Previous empirical evidence (Luthans, Avolio, Avey, et al., 2007) has supported a higher order single factor of PsyCap, therefore internal consistency (alpha = 0.92) of the overall scale and total scales were computed for inclusion in the analysis. Participants in the current study were students and therefore a modified version of the original PsyCap assessment was used. The assessment is exactly like the original except respondents are asked to use their "life and school work" as the appropriate frame of reference for items (see Luthans, Luthans, & Jensen, 2012).

Performance criterion

The individual performance criterion in the simulation involves the participant's ratio of simulation time used to advocates gained. It is the task of the change agent to build support for the change initiative and move the organization through three stages (mobilize, movement, and sustain). The organizational change stage is determined by the number of individuals whom the change agent has influenced to become advocates, or, who have moved into the individual final phase of adoption (beyond awareness, interest, and trial). The simulation automatically ends when the participant has influenced 80% (or higher) of management level employees to become advocates. Performance is defined as the ratio of advocates to the number of weeks used (participants are allowed a maximum of simulated 96 weeks).

Analysis

Hypothesized conditional relationships involving a moderated mediation (Hypotheses 1, 2a-b, 3a-b) were assessed using a conditional process model, wherein the first and second stage indirect effects of the independent variable on the dependent variable through the mediator are moderated (Preacher, Rucker, & Hayes, 2007). Significance values and coefficients were calculated using the PROCESS SPSS macro (Hayes, 2012).

Table 1. Descriptive statistics and correlation matrix of all variables.

	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. GCA	23.60	5.65	(NA)										
2. Depression	12.86	5.76	−0.18*	(0.84)									
3. Vulnerability	10.34	4.62	−0.38**	0.72**	(0.80)								
4. Assertiveness	18.41	5.44	0.15	−0.37**	−0.47**	(0.84)							
5. Achievement	21.24	4.93	0.20*	−0.32**	−0.41**	0.42**	(0.82)						
6. PsyCap	110.09	12.73	0.28**	−0.48**	−0.58**	0.51**	0.48**	(0.90)					
7. Efficacy	28.92	3.53	0.15	−0.31**	−0.43**	0.50**	0.40**	0.77**	(0.76)				
8. Hope	27.89	4.17	0.23**	−0.46**	−0.51**	0.46**	0.50**	0.90**	0.62**	(0.83)			
9. Resiliency	27.64	3.79	0.32**	−0.42**	−0.54**	0.43**	0.44**	0.84**	0.55**	0.69**	(0.72)		
10. Optimism	25.78	3.91	0.27**	−0.42**	−0.45**	0.36**	0.29**	0.80**	0.43**	0.62**	0.57**	(0.70)	
11. Performance	0.14	0.08	0.34**	−0.13	−0.18*	0.18*	0.05	0.23*	0.23*	0.22*	0.19*	0.13	(NA)

Notes: GCA: General Cognitive Ability; Achievement: achievement striving; PsyCap: Psychological Capital; Performance: computer simulation performance; internal consistency estimates in parentheses on diagonal. $n = 129–166$ for variables.
*$p < .05$.
**$p < .0$.

Mediation effects were estimated at −1, 0, and + 1 standard deviations of moderating variables. Bootstrap confidence intervals are utilized to assess significance. Significant moderating effects where probed using the pick-a-point approach (Bauer & Curran, 2005), wherein regression lines were plotted at the 10th, 25th, 50th, 75th, and 90th percentile values of the moderator. In addition, all variables were mean centred prior to analyses (Aiken & West, 1991).

Results

Descriptive statistics and correlations between personality factors with performance variables are presented in Table 1. While studies concerned primarily with isolation and examination of psychological processes arguably present less concerns about generalizability from student to adult employed populations (Greenberg, 1987; Locke, 1986), a comparison of the current sample with normative data is provided below as an additional estimate of external validity. Specifically, the current sample was compared to normative data for the Wonderlic Personnel Test (Wonderlic, 2007) and NEO PI-R (Costa & McCrae, 1992b). In terms of cognitive ability, participants in the current study ($M = 23.6$, $SD = 5.7$) were slightly higher than national ($M = 20.3$, $SD = 7.0$) and college norms ($M = 21.9$, $SD = 6.3$). Respondents were more similar in terms of personality when compared to national workforce normative data than college enrolled normative data. The NEO PI-R Professional Manual (Costa & McCrae, 1992a) defines scores "very low" (i.e. $T = 20$ to $T = 35$), "low" (i.e. $T = 35$ to $T = 45$), "average" (i.e. $T = 45$ to $T = 55$), "high" (i.e. $T = 55$ to $T = 65$), and "very high" (i.e. $T = 65$ to $T = 80$). Compared to the NEO PI-R adult workforce normative data (Costa & McCrae, 1992b), respondents in the current study scored "average" on Neuroticism, Openness to Experience, and Conscientiousness. Both male ($T = 58$) and female ($T = 56$) respondents scored slightly "high" on Extraversion, whereas female ($T = 42$) respondents scored slightly "low" on Agreeableness (Costa & McCrae, 1992a). In contrast, male college enrolled normative data respondent scores fall outside the "average" range on Neuroticism ("high"), Agreeableness ("low"), and Conscientiousness ("low") when compared to the adult workforce normative data. Female college enrolled normative data respondent scores are outside the "average" range on Neuroticism ("high"), Extraversion ("high"), and Agreeableness ("low") (Costa & McCrae, 1992b). This suggests current study participants share an even more similar personality profile to that of the adult workforce norms than the original college enrolled normative data.

Hypotheses were tested via a conditional process model to estimate the mediating and moderating effects. Independent of moderator variables, PsyCap mediated the relationship between GCA and simulation performance, ($\beta = .0034$, SE = .0017, 95% CI [.0053, .0209] $p < .01$). These results support the proposed conditional indirect effect (Hypothesis 2). The relationship between GCA and the mediating variable PsyCap was not moderated by depression, which did not support Hypothesis 2a. The first stage mediation was moderated by vulnerability ($\beta = −.12$, $t = −2.28$, $p < .05$) (Table 2). A probe of the standardized regression lines shows that high levels of vulnerability attenuated the positive relationship between GCA and PsyCap, supporting Hypothesis 2b. In fact at extremely high levels of vulnerability (i.e. 90th percentile) the relationship is slightly negative, as shown in Figure 2. The relationship between PsyCap and simulation performance was not moderated by

achievement striving (not supporting H3a), but was moderated by assertiveness ($\beta = -.0012$, $t = -2.41$, $p < .05$), which is shown in Table 2. A probe of the standardized regression lines displayed in Figure 2 shows that the relationship between PsyCap and simulation performance is stronger and positive for those lower in assertiveness, supporting Hypothesis 3b. Results also display a crossover interaction, wherein the relationship between PsyCap and simulation performance is negative when assertiveness is extremely high (i.e. 90th percentile).

Overall, results support a moderated mediation model wherein the conditional indirect effect of GCA on change-related simulation performance via PsyCap, such that the indirect effect is strongest when both vulnerability and assertiveness are low (i.e. 0 to -1 SD). Specifically, the first stage indirect effect from GCA to PsyCap is stronger and positive for those lower in vulnerability, and, the second stage indirect effect from PsyCap to change-related simulation performance was stronger and positive for those lower in Assertiveness.

Discussion

The current study contributes to the literature on organizational change (Bray, 1994; Nikolaou et al., 2007; Wanberg & Banas, 2000) by assessing the importance of micro, or individual level, key personal resource variables related to organizational change agent influence. It is the first study to assess the impact of the key resource of PsyCap, via a conditional process model, on simulated organizational change agent performance. Second, this study builds on previous research (i.e. Nikolaou et al., 2007) in an attempt to contribute towards filling a gap in the literature – the key individual psychological characteristics of effective change agents. Finally, a theoretical conditional process model is proposed-based on COR theory that provides a framework for understanding how both stable and malleable key personal resources interact in terms of acquisition, transformation, and application.

Table 2. Conditional process model results assessing proposed 1st and 2nd stage moderation.

Predictor	β	DV: PsyCap		
		SE	t	p
Intercept	−0.75	1.06	−0.71	0.48
GCA	0.08	0.19	0.45	0.65
Depression	−0.53	0.26	−2.01	0.05
GCA × depression	0.07	0.04	1.56	0.12
Vulnerability	−1.22	0.34	−3.56	0.00
GCA × vulnerability	−0.12	0.05	−2.28	0.03
Model R^2	0.65			0.00
	β	DV: Performance		
		SE	t	P
Intercept	0.15	0.01	19.52	0.00
PsyCap	0.00	0.00	1.55	0.13
GCA	0.00	0.00	2.87	0.01
Assertiveness	0.00	0.00	0.77	0.45
PsyCap × assertiveness	−0.00	0.00	−2.41	0.02
Achievement	−0.00	0.00	−0.79	0.43
PsyCap × achievement	−0.00	0.00	−0.66	0.51
Model R^2	0.47			0.00

Note: DV = Dependent variable. PsyCap × Assertiveness effect size is $\beta = -0.0002$. $n = 166$.
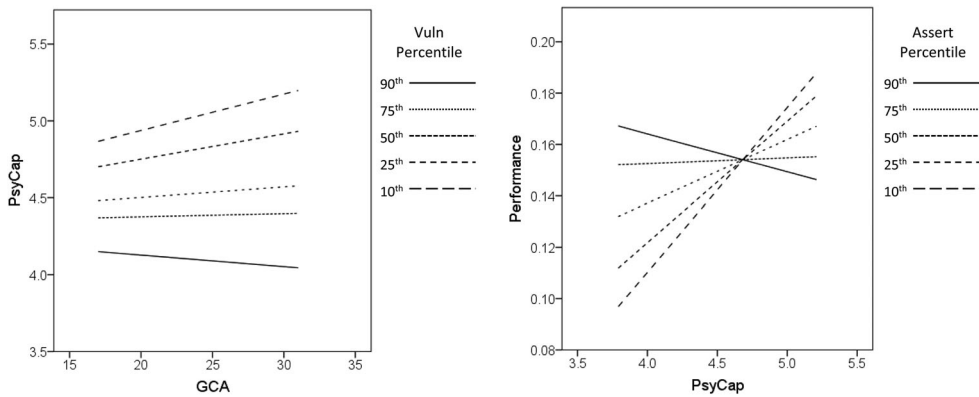
Figure 2. Probes of first and second stage moderation of the PsyCap mediated relationship between GCA and performance. Note: Values of PsyCap were averaged before probing to scale values according to the range of the actual response options (i.e. 1 – Strongly Disagree to 6 – Strongly Agree). Vuln: vulnerability; PsyCap: Psychological Capital; GCA: General Cognitive Ability; Assert: assertiveness; Performance: simulation performance; or, change effectiveness ratio. Graph of the left represents first stage moderated mediation; the relationship between GCA and PsyCap moderated by vulnerability. Graph on the right represents the second stage moderated mediation; the relationship between PsyCap and performance moderated by assertiveness. Probes of each moderator are shown at the 90th, 75th, 50th, 25th, and 10th percentile. The distance between dashes in the other lines becomes further as percentile descend, with the greatest distance between dashes representing the 10th percentile. Finally, y-axis values are in accord with the potential range of criterion values, PsyCap items were rated on a scale of 1 to 6 and Performance was computed as a ratio from 0.00 to 1.00. $n = 166$.

Results suggest that PsyCap is a potentially important antecedent of change agent ability to persuade stakeholders towards adoption of change, in that the correlation between PsyCap and performance ($r = .229$, $p < .01$) is comparable to that of GCA and performance ($r = .343$, $p < .01$). Results also suggest that PsyCap acts as a mediator between GCA and simulation performance. Additionally, this mediation effect is moderated by narrow FFM traits of vulnerability (a facet of neuroticism) and assertiveness (a facet of extraversion) such that high levels of vulnerability or assertiveness weaken the respective direct relationship.

Theoretical implications

Results shed light on the complex relationships between key psychological resources, as understood within the framework of COR theory. Key resources are defined as those characteristics that facilitate acquisition, alteration, and application of other resources (Hobfoll, 2002). Each of the antecedents in the current study is conceptualized as key resources in that they augment the relationships of others. Postulates of COR theory suggest key resources interact to create "resource caravans", suggesting that these resources do not act in isolation. Researchers have pointed out the theoretical importance of distinguishing key resources in terms of volatility or malleability (ten Brummelhuis & Bakker, 2012). The current study leverages this distinction to empirically assess the conditional pathway of key resources. Specifically, PsyCap is tested as a more volatile bundle of state-like key resources that are influenced by the more stable key resource

of GCA. However the pathway from GCA to PsyCap, and the pathway from PsyCap to subsequent performance, is influenced by stable trait-based key resources.

The intent of the current study was not to simply classify certain individual difference variables as key resources, but rather to build a conditional process-based on an integrative resource theory. In doing so the current study suggests that distal ability-based key resources may lead to proximal state-like key resources. However, the acquisition of state-like key resources is moderated by trait-based information processing and attribution processes (Abramson et al., 1978; Beck, 1967, 1976; Coyne & Gotlib, 1983).

While previous research has shown that disadvantageous cognitive schemas manifests in the misperception and misinterpretation of events, thereby hindering benefits of one's own ability (Abramson et al., 1978; Beck, 1967, 1976), the current study suggests that vulnerability moderates the positive relationship between ability and PsyCap. For those high in vulnerability it seems that GCA does not have the same positive effect that it does for those who are low in vulnerability. Therefore the current results suggest that personality facets may temper the psychological resource-gains provided by one's own ability. This provides a boundary condition for the COR theory postulate that resources are a means by which one enriches oneself with additional resources (Hobfoll, 2002).

Additionally, the application of state-like key resources is moderated by trait-based regularly motives or tendencies (Kanfer & Heggestad, 1997, 1999). According to COR theory, facilitating the use of key resources is also a central motive of individual behaviour (Hobfoll, 1989). In accord with previous work on approach-oriented disposition, assertiveness plays a boundary-setting role by way of resource regulation (Kanfer & Heggestad, 1997, 1999). *Assertiveness involves a* tendency towards pursuit of goals that is likely to override similar state-like tendencies. In an iteratively adaptive change-oriented task like that which was simulated in the current study, assertive individuals are likely to persist with less regard for positive state-like resources such as efficacy and resiliency. Subsequent research should continue to explore the complex relationships between different types of key resources by, for instance, extending the current model to different contexts.

Practical implications

These results have important implications both for placement and development of employees who can effectively influence and facilitate change. Innovative organizations require employees lower in the organization to effect rather than simply manage the change process (Day, 1994; Kotter, 2012). Thus lower and mid-level employees can and should act as primary agents of change (Caldwell, 2003), or what has sometimes been referred to as emergent change (Chia, 2014; Greenwood & Hinings, 1996; Plowman et al., 2007). First, placing employees in organizational change management positions based on individual characteristics related to change agent effectiveness may have positive organizational results (Nikolaou et al., 2007). Results suggest that employees who score high on measures of GCA and PsyCap may be more equipped to drive change. Likewise, the narrow traits of assertiveness and vulnerability do show significant positive and negative correlations, respectively with the criterion. It may not only be beneficial to place agents based on narrow trait scores, but consideration should be given to the moderating effects of these variables. For instance, given the positive relationship between

assertiveness and performance, and, its interaction effect with PsyCap it might be that for highly assertive individuals PsyCap is less important for effecting change. More research on this interaction effect is needed. Finally, it should be noted that vulnerability serves to attenuate the relationship, defined as the first stage of the current mediation model, between GCA and PsyCap. Therefore human resource development attempts to enhance PsyCap may be partially thwarted with agents scoring high on vulnerability.

This is not to say that change agents must necessarily be selected. In fact, the human resource development implications are perhaps even more promising from a practical standpoint. In fact it is just recently that researchers have begun to emphasize the importance of designing systems that enrich resource caravans (Hobfoll, 2010). Therefore the second major practical implication is that employees can develop the key psychological resources necessary to act as effective change agents. This finding contributes to previous research on the necessary psychological capabilities of change agents (Ghitulescu, 2013; van Dam, 2013). The finding of the significant positive relationship between the key resource PsyCap and change performance, as well as its mediating effect, should be quite relevant for both business leaders and human resource development practitioners. The state-like nature of PsyCap has proven amenable to individual development. Evidence from research and practice suggests that human resource development techniques improve PsyCap overall (Luthans, Avey, Avolio, & Peterson, 2010) and each facet individually; efficacy (Bandura, 2009), hope (Luthans & Jensen, 2002), optimism (Schulman, 1999), and resiliency (Luthans, Vogelgesang, & Lester, 2006). Preliminary evidence suggests that an efficient development method involving a micro-intervention can increase PsyCap and ultimately financial returns (Luthans, Avey, et al., 2006), which suggests a low investment in training and high return.

Specifically, brief training interventions lasting from as little as several hours have shown to increase the four facets of PsyCap (see Luthans, Avey, et al., 2006 for review). Training change agents to (1) develop specific change-related goals with measurable outcomes, as well as (2) an approach towards accomplishing desired goals (e.g. identifying and attempting to influence resisters rather than avoiding them), and (3) identifying sub-goals that allow the change agent to experience small wins along the way should serve to enhance levels of hope (see also Snyder, 2000 for training on hope). Relatedly, optimism can be developed by having change agents anticipate negative evens or failures and create contingency planes to overcome or at least minimize failures. As anticipated likelihood of failures become minimized pessimism can be decreased and optimism increased. Cognitive framing used to develop realistic optimism (Beck, 1967, 1976) has been shown to be effective (Luthans, Avey, et al., 2006). There is a vast literature on the development of efficacy by way of enactive mastery, vicarious modelling, verbal persuasion, and arousal of effort (Bandura, 1986, 2009). This would translate into change agent training by providing agents with skills (e.g. stakeholder analysis, opinion leadership) and designing practice to apply those skills, providing mentors to model effective behaviour, and facilitating practice of skills by verbal persuasion and encouragement. Finally, much of the research on development of resilience emphasizes developing or enhancing one's individual assets and attempting to reduce the effect or likelihood of stressors (see Masten, 2001). In one effective development intervention participants write down immediate reactions to setbacks and then a facilitator enables participants to cognitively re-frame their reactions by assessing what they have control over, which aspects of the event are

out of their control, and options for taking action (Luthans, Avey, et al., 2006). This suggests training focused on cognitive re-framing setbacks in terms of their perceived impact, the change agent's control over the setback, and options for overcoming the perceived setback will enhance resiliency. Therefore these short-term interrelated training interventions should serve to enhance change agent PsyCap.

Likewise, more long-term interventions might be focused on developing those personality traits that detract from the development, and deployment, of PsyCap. Those scoring high in vulnerability or related traits that temper the relationship between cognitive ability and PsyCap may benefit from interventions that focus on altering belief systems (Dweck, 2008) and cognitive attribution processes (Beck, 1967, 1976).

While alteration of traits may not be amenable to micro-interventions, such as PsyCap appears to be, research suggests that changes in belief systems can lead to shifts in levels of personality traits (Dweck, 1999, 2008). Therefore longer-term interventions focused on cognitive framing of, or beliefs regarding, personality development should enhance development. This will allow change agents to enhance those aspects of personality most conducive to change agent influence.

Likewise, the present study suggests that vulnerability may prevent the acquisition of PsyCap. This is due to a dysfunctional cognitive schema wherein individuals recall more negative information, make more negative self-evaluations, and attribute failures to internal rather than external characteristics (Coyne & Gotlib, 1983). A variety of cognitive restructuring techniques have been long been known to be effective at decreasing individual vulnerability to stressors and difficulties (Beck, 1976). Specifically, training that enables individuals to possess a realistically positive view of their efforts by reframing negatively biased self-appraisals, and, challenging automatic negative thought processes has been shown to be effective (Beck, Rush, Shaw, & Emery, 1979). Equipping change agents with cognitive reframing skills will, according to the proposed conditional model, reduce vulnerability and increase the likelihood of acquiring the important resource of PsyCap.

Finally, results suggest that assertiveness interacts with PsyCap, such that higher levels of assertiveness attenuate the positive relationship. Facets of conscientiousness are theorized to play a boundary-setting role by way of resource regulation (Kanfer & Heggestad, 1997, 1999). However, at the highest levels of assertiveness (Figure 2) the relationship between PsyCap and performance is negative. Excessively high levels of assertiveness may represent "too much of a good thing". In essence, assertiveness acts as a disinhibiting mechanism wherein a tendency towards action and pursuit of goals overrides more balanced and effective application of efficacy, hope, optimism, or resiliency. Researchers and practitioners alike should explore the implication that individual development programmes may enhance important individual differences and attitudes of effective change agents.

Taken together these results suggest that training programmes, from "micro" to long-term, can be used to develop more effective change agents. Specific development programmes outlined above can be used to strengthen and develop key psychological resources of change agents. These training interventions may include introducing approaches to problem-solving related to PsyCap (Luthans, Avey, et al., 2006), methods of cognitive framing (Beck, 1967, 1976), fostering a development orientation (Dweck, 2008), and social learning (Bandura, 1986, 2009). The modern business environment

requires voluntary actions of employees to effect change through informal networks (Day, 1994; Kotter, 2012). Fostering change-related psychological resources should enable more successful emergent (Chia, 2014; Greenwood & Hinings, 1996; Plowman et al., 2007) approaches to change.

Limitations

There are several limitations of the current study. First, simulation studies provide opportunities for measurement and control beyond those available in observational field studies, however it is just these types of controlled settings that call in to question fidelity. The study was designed to assess one metric resulting from the participant's ability to complete various simulated change-related tasks. For example, participants assessed biographical sketches of employees and then decided whom to target with an intervention (e.g. conduct informational interview, send progress report, provide skills training). Obviously in an organizational setting deciding to conduct an informational interview to gain further information about a target's receptivity to the change process would require a host of additional interpersonal skills beyond those required to select an appropriate option on a computer screen. Therefore the current simulation study was very much a decision-making process. It would be beneficial to assess additional change-related tasks including those demanding interpersonal skills and influence, and, it would be ideal to replicate findings in an organizational setting. Relatedly, the single characteristic shared by all participants was undergraduate business school enrolment. Students were chosen as the current study seeks to isolate and examine psychological processes in a population closely related to entry-level employees, and, in this regard there are more similarities between students and employees than differences (Greenberg, 1987; Locke, 1986). However there are still likely to be differences. Therefore it would be beneficial to test the proposed theoretical conditional process model across situations and settings to establish generalizability (Locke, 1986).

Finally, the duration of the change effort limits understanding of the complex relationships between cognitive ability, personality, PsyCap, and performance over time. The computer simulation was a relatively short duration series of tasks. In a long-term change process it is likely that other FFM personality facets would also serve as regulatory mechanisms in the deployment of PsyCap. As one example, in a longitudinal study of what would be called more typical (rather than maximal) performance the relationship between PsyCap and performance criterion may be moderated by facets of conscientiousness (e.g. deliberation), such that these facets act as a regulatory motivational mechanism and therefore conserve PsyCap for important tasks. In addition, in the current study the real-time feedback provided to participants regarding their performance (i.e. selecting the correct or incorrect "change action") was assumed to activate the conditional psychological model involving personality disposition and PsyCap. However, a powerful follow-up study would be to measure changes in levels of PsyCap across time as the task unfolds. Additionally, a control group that receives no feedback until the final performance score would both model the potential ambiguity change agents often face during change initiatives, as well as provide a comparison group with which to estimate the impact of immediate success or failure feedback on PsyCap.

Conclusion

Modern economies will continue to demand that organizations adapt and change to be successful. Scholars and practitioners recognize that radical change is often driven by lower level employees rather than leaders and therefore requires employees to act as agents in the change process (Huy, 2002; Kotter, 2012). These change agents are a key element of the individually mediated system-wide change process. To be effective these agents will need to possess key personal resources. To facilitate individual effectiveness it will be important for organizational leaders to create environments that foster these individual resources, or, create "resource pathways" (Hobfoll, 2010). Enabling employees with these key resources will increase the likelihood of organizational adaptability.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributor

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