Construction management research at the individual-level of analysis: current status, gaps and future directions

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Abstract

Individual-level constructs are seldom taken into consideration in construction management research relating to project performance. This is antithetical to the objectives of properly conceptualizing and contextualizing the research we do because many project performance outcomes, such as the extent of cooperation and level of communication or teamwork are influenced and moderated by individuals' perceptions, values and behaviour. We offer a brief review of the literature in organizational studies, centred on culture, identity, empowerment, and trust. We then explore how these constructs relate to project performance issues and outcomes, and note that they are predominately studied at the project- and industry-level. We argue that focusing these constructs at the individual unit of analysis have significant implications for project performance and therefore their effects need to be systematically accounted for in explanations of the success and failure of projects. Far from being prescriptive, our aim is to generate interest and awareness for more focused research at the individual-level of analysis in order to add new insights and perspectives to critical performance questions in construction management. To this end, we outline elements of a research agenda, arguing that construction management research integrating individual-level constructs and broader, macro contextual issues will help define and enhance the legitimacy of the field.

Keywords: individual-level, project performance, unit of analysis, social psychology, organizational studies

Introduction

Construction management research related to performance issues is primarily conceptualised and operationalized at the macro industry or project level of analysis. This reflects the research tradition within the field of defining project performance (i.e. standardly determined by cost, time and quality[1]) through certain theoretical lens such as transaction cost theory (Williamson 1991), resource dependency theory (Pfeffer and Salancik 1978), institutional theory (DiMaggio and Powell 1983, Oliver 1991) and, agency and social exchange theory (Jensens and Meckling 1976, Cook and Emerson 1978). Recent contributions to this journal on project performance still bear this out (e.g. Li *et al*. 2012, Tabish and Jha 2011, Chi and Javernick-Will 2011, Phua 2006, 2005, Li *et al*. 2005). These theories rest on the assumption that decisions are based on bounded rational choice that is driven by considerations for economic efficiency. Even when partnering procurement is used, where it is claimed to lead to improved project performance, the extent of collaborative relationships still stem from rational 'estimations' of the benefits that could be gained by project parties (Bresnen and Marshall 2000, Alderman and Ivory 2007). A number of scholars have long argued that such theories, useful though they are, place too little emphasis on individual-level constructs affecting the human agents within organizations (e.g. Ghoshal and Moran 1996, Podolny 1994). In construction management literature, although there is continuing strong interest to investigate the underlying economic, environmental, structural and technical factors affecting project performance, there is a growing recognition that in-depth understanding of the complexities of performance issues can only be realistically achieved when individual-level constructs are taken into account too (Liu and Walker 1998). Interestingly indeed, Cooke-Davies (2001) noted that "although it is fast becoming accepted wisdom that it is people who deliver projects, and not processes and systems", his survey of more than 70 large multi-national construction companies revealed that none of the critical project success factors found is directly concerned with "human factors" (p.189). This resonates with the

[1] We realise that project performance is also sometimes measured by other criteria such as for instance, client satisfaction. For the purpose of this paper, we are more interested in highlighting the commonly accepted criteria instead of trying to define project performance comprehensively.

notion that project performance measured by the parameters of cost, time and quality is too limiting without taking into consideration the range of performance-related issues that exist during various phases of the project and which have a direct bearing on project outcome (e.g. Pinto and Slevin, 1988). Encouragingly, research into project performance has become more focused on performance-related issues such as cooperation, trust, leadership, and teamwork that are influenced by human factors. However, there are examples that when human factors are included in research relating to project performance they tend to be operationalized at the project or organizational level of analysis – culture (Kuo and Kuo 2010, Yong and Pheng 2008, Zhang and Liu 2006), trust (Doloi 2009, Wong *et al*. 2000) and leadership (Sumner and Slattery 2010, Giritli and Oraz 2004) – and not necessarily always at the individual-level. It makes practical and conceptual sense that individual-level constructs are considered in the evaluation of project outcomes because "behaviour of the project organization (at the macro-level) is the aggregate of the project participants' behaviour (at the micro-level)" (Liu and Walker 1998: 211). Although considerable attention has been devoted to broader environmental influences and organizational factors in the study of performance issues, "human, cultural and psychological factors still attract relatively little attention in the construction literature" (Nicolini 2002: 69). This is unfortunate because research in management and organizational studies show individual-level constructs in terms of individual beliefs, cognition, values, and predispositions can have a significant effect on organizational level decisions and performance (e.g. Waldman and Yammarino 1999, Dickson and Weaver 1997).

That said, nascent interest in this area is emerging in construction management, as research on, for instance, leader authenticity (Toor and Ofori 2009), team empowerment (Tuuli and Rowlinson 2009), perceptions of risk and safety (Hallowell 2010, Baarts 2009) and identity-based cooperation (Phua 2004) are all grounded on individual-level constructs that are operationalized at the individual-level of analysis. This is an encouraging development in the field because it promotes the necessity of investigating project performance issues from the perspectives of the individual-level and the

broader environment. We argue it is this 'person-environment' approach that forms the starting point for more comprehensive investigations of what makes some projects more successful and others less so.

We have three broad objectives in writing this paper. First, we provide a brief introduction to mainstream management and organization studies literature on the germane individual-level constructs which are rooted in social psychology, and which are often employed in research relating to organizational/project performance. We concentrate on (i) culture, (ii) identity, (iii) empowerment, and (iv) trust at the individual-level of analysis. Second, the construction management literature is investigated in order to examine how these constructs relate to existing and future research in project performance. Third, we outline elements of a research agenda which argues that positioning our research at the intersection between individual and organizational levels of analysis is a potentially generative approach for researchers in construction management, and thus to improve further empirical work and theorizing.

Our decision to focus on the four constructs of culture, identity, empowerment, and trust is because they are salient and relevant to project performance research. In particular, our decision is based on two main sets of reasons. First, researchers in construction management have often used these constructs (albeit mostly indirectly) in studies related to project performance which are well-reflected in published papers in the main journals in the field. Second, these have already been highlighted within the organizational studies literature as having significant implications for performance issues. This of course does not exclude other constructs to which project performance issues may be analysed. It is important to point out that although project performance is commonly regarded as an organizational- or project-level outcome, it is not very useful conceptually and empirically to operationalize it at this level because it is notoriously difficult to determine the nature and extent of relationships between project performance that is defined as a higher order entity and

the myriad of factors (from individual, team, organizational, project levels) that might have some impact on it. Therefore, if we are to focus on individual-level research, it is important to analyse the *behavioural aspects* of project performance like cooperation, communication and teamwork which are explicitly influenced by individual-level factors such as behaviour, perceptions and values. In this context, we argue that project performance *per se* has little conceptual meaning unless it is treated as an entity that is derived from performance-related variables such as willingness to cooperate and level of communication between project parties which can all significantly impact on the success and failure of projects.

Individual-level constructs in organizational studies – a social psychology perspective

Constructs such as culture, identity, empowerment, and trust have become key themes for researchers in management and organization studies interested in their relationships either as a cause, effect or moderator with various performance-related variables like cooperation, conflict management, teamwork, decision making etc. In simple terms, they can be regarded as rooted in social psychology in that considerations for individual psychology and the micro aspects of human behaviour are generally undertaken in conjunction with an understanding of the big social picture in which the economy, institutional and social systems are enacted and organized (e.g. Tajfel 1981). Given this interdisciplinary perspective, it is unsurprising therefore that these constructs are often framed and studied at multi-levels of individual, group, networks, organizational, or institutional depending on the disciplinary assumptions that are being adopted. For example, disciplinary differences influence the way trust is framed such that psychologists tend to focus on the individual attributes and occasionally the group; sociologists, the group and society; and economists, the individual or the larger firm (Rousseau *et al.* 1998). However, because of the inherent issues of embeddedness (Granovetter 1985), we understand that it is often impractical or undesirable to confine ourselves to specific levels of analysis. Kramer and Tyler (1996), for example, argue that micro-level trust relations are constrained and influenced by macro institutional processes, just as

broader forms of trust, particularly those between firms, are influenced by micro-level factors in terms of how individuals relate to each other (Zaheer *et al*. 1998, McAllister 1995). Hence from a social psychology perspective, it is not so much why these constructs require a multi-level analysis but rather how these constructs are conceptualised that determines which level of analysis is most appropriate. In the following, we briefly review the literature in this area related to the constructs of culture, identity, empowerment, trust and leadership, focusing on their relevance to performance issues more generally before connecting these to specifically construction project performance. While each of these constructs has been used extensively by researchers in multi-level analysis in various research contexts, their operationalization at the individual-level of analysis is emphasized to inform research in construction management.

Culture

Despite being widely accepted as a group level (shared) phenomenon, culture influences individuals' perceptions, values and behaviours, especially in the contexts of social interactions with each other and with the environment. While many accept that there are 'whole', distinct cultures between countries (e.g. Hofstede 1980, Ronen and Shenkar 1985, Kogut and Singh 1988) and hence ascribe stereotypical, if not simplistic characteristics to them in cross-cultural studies (McSweeney 2002), important works by researchers such as Triandis (1995) and Wagner (1995) have provided useful frameworks of an individual-level approach that look at variance within cultures in order to understand its complexity and to explain patterns of individual behaviour and other outcomes within specific cultures. For example, cultural dimensions like individualism and collectivism can be treated as national cultural constructs in the tradition of Hofstede's work or they can be operationalized as individual-level constructs based on the work of researchers like Triandis (1995) or Hui (1988) that are more appropriate for measuring cultural variances that exist in otherwise broad categorisations of national cultures. Because individuals are essentially 'holders' of cultural beliefs and values, measuring the variance at the individual-level of analysis and aggregating the measures to develop

descriptions of country or organizational culture is consistent with the assumption that subtle variations within cultures are inevitable. This approach enables researchers to use the individuals as the unit of analysis and by measuring cultural beliefs at the individual-level such measurements can be more convincingly used to predict organizational and work attitudes such as preferences for teamwork, cooperation, organizational justice (e.g. Erez and Earley 1993).

This is a useful departure from many previous studies that have used the still popular cultural frameworks that define cultural similarities and differences using countries or clusters of countries as the unit of analysis. Defining the country as the unit of analysis and the convenient clustering of these countries as having relative similarities and differences (e.g. Anglo culture, Nordic culture, Far Eastern culture) has been argued to be useful in that "results from one country can be generalized to the entire group of countries sharing a particular variable within the same cluster" (Ronen and Shenkar 1985: 435). The appeal that 'cultural distance' between countries can be determined by the extent to which national cultures are similar or different has seen it being applied extensively to research in many disciplines. In management, cultural distance based on countries has been used as a key construct in strategy, human resource management and organizational behaviour and applied to studies ranging from innovation and organizational transformation to foreign direct investment and foreign expansion. Precisely because the nature of culture makes it difficult for it to be captured in its entirety, the cultural distance construct "offered a tangible and convenient tool with which to bypass the complexities and intricacies of culture, yielding a quantitative measure to be employed in combination with other 'hard' data" (Shenkar 2001: 519). However, many of the limitations with this type of research have been highlighted in mainstream literature with the most prominent ones being problems related to conceptualization and validity due to the various underlying assumptions and questionable methodological properties involved that effectively mask important but nuanced variances within cultures (McSweeney 2009, Shenkar 2001). Yet it is these commonly overlooked cultural variances that lead to interesting interpretations and insights in studies of cross-cultural and

organizational issues. For example, in construction, Winch *et al*. (1997) reported that Hofstede's national cultural dimensions did not predict the behavioural differences between French and UK construction managers as hypothesized, indicating that the assumption that national culture affects individual and organizational behaviour "is found to be wanting" (p.247). This is because although Hofstede aggregated individual-level responses in his initial survey to arrive at national averages of his four-factor cultural model, these factors do not replicate with individual-level responses. Hence, Hofstede's cultural model applies only to the national level of analysis and is not appropriate for studying individual cultural orientations (Taras *et al*. 2009). This is a problem known as 'ecological fallacy' in which inferences are (inappropriately) drawn about individuals based on aggregate level data analysis (Robinson 1950). To illustrate, based on census data it appears that individualism based on Hofstede's national culture typology and wealth are strongly correlated at the national level, such that countries that are typically categorised as individualistic like USA, UK and Australia tend be wealthier but this does not mean that the same relationship will be present at the individual-level. This therefore limits the generalizability of results at one level to other levels (Taras *et al*. 2009). Another methodological problem that poses limitations on the generalizability of results is when comparing different samples with similar cultural characteristics and making inferences about the convergence of national culture values. For example, highly educated and relatively well-paid employees in a knowledge-based company might be representative of the cultural landscape of the general population of developed countries, but this might not be case for developing countries where the cultural divergence between the knowledge worker sample and the general population is likely to be greater. In construction management this kind of empirical and non-empirical papers are still commonly encountered, such as for instance, Liu and Fellows (2001) and Kwan and Ofori (2010) who assert that Chinese culture aids the implementation and success of partnering projects based on aggregate (societal) level norms/assumptions and data, and inferring this relationship to the individual-level.

In light of these limitations and many scholars arguing for more studies using the individuals as the unit of analysis in the measurement of culture, it is worth noting that construction management researchers are slowly adopting this approach (e.g. Baarts 2009). However, where this is not the case and the unit of analysis remains the country, organization or project (e.g. Kuo and Kuo 2010, Yong and Pheng 2008, Fisher and Ranasinghe 2001), it is not necessarily a drawback *per se* provided the use of aggregate national or organizational culture dimensions is theoretically and methodologically justified. Following Shenkar's (2001) recommendations, if such macro-level dimensions are used, it is important to use measures drawn from different sources to provide alternative cultural classifications. He also suggested that aggregate level dimensions of culture should be supplemented by cognitive and perceptual individual-level measures whenever possible to make culture and cultural differences more salient. This we argue would constitute a constructive avenue for future culture research in construction management where such rigour is often lacking. In particular, we feel that culture research in the field will be richer if more studies are undertaken to explore the various not-so-obvious mediator and interaction effects between culture and other variables of interest rather than the current treatment of using culture primarily as an independent variable of project performance. Not only will this offer more opportunities for operationalizing culture at the individual-level of analysis but more interestingly, it also allows researchers to critically investigate and analyse the often intuitively accepted but explicitly unexamined mediating effects of individual cultural perceptions, belief and values against a broader range of performance and outcome related issues.

Identity

Another individual-level construct that is repeatedly shown to be linked to organizational performance is identity. Identity research in organizational literature is gaining importance for two reasons. At the macro-level, as organizations become more complex and dynamic, conventional organizational hierarchies, processes and forms are being re-designed or replaced to create

flexible/organic capacities and competencies that (directly or indirectly) result in a range of fluid heterogeneous entities. Against this backdrop, it becomes more important "to have an internalized cognitive structure of what the organization stands for and where it intends to go". At the micro individual-level, it is because of this "loss of organizational moorings that individual identity and identification are critical issues" (Albert *et al*. 2000: 13). Although identity is an important bridging concept between levels of analysis – individual, group, organization and society (Ybema *et al*. 2009), most research in management and organization studies are concerned with the identities of organizations (Albert and Whetten 1985, Dutton and Dukerich 1991), of individuals' work identities (Pratt 2000) and individuals' social identities (Ashforth and Mael, 1989). However, there has recently been particular interest and emphasis on research on identity at the level of the individual (see Special Issues on Constructing Identity in Organizations, *Human Relations* 2009; Identities in Organizations: Processes and Outcomes, *Scandinavian Journal of Management*, 2012). Subjectively construed identities (i.e. identities as they are constituted through what people do, say and write, which are refined and formed within organizational and managerial contexts) are available to individuals as reflexively organized narratives "derived from participation in competing discourses and various experiences" and which are "productive of a degree of existential continuity and security" (Alvesson and Willmott 2002: 625-6). These narratives provide answers to questions like 'who am I?', 'who are we?' and 'who do I want to become?' both for the self and for significant others with whom identity narratives are formed and negotiated (e.g. Brown and Humphreys 2006). A recognition that organizations are not just significant contexts in which identity is enacted, reinforced or negotiated, but also important arenas for the agency of human actions, has raised questions regarding the extent to which identities are chosen or the products of social and institutional structures (Webb 2006). Most researchers, however, recognize that while subjectivity and power are inextricably interwoven in all organizational practices individuals are, nevertheless, able to exercise a degree of agency. Thus while "The biography of any particular person in an organization is…made under circumstances that they did not choose" (Webb 2006: 32-3)

organizational members "are not reducible to passive consumers of managerially designed and designated identities" (Alvesson and Willmott 2002: 621). At this fundamental level, identity and identification constructs offer a useful lens for explaining individual behaviour, actions, inactions and motivation within an organizational framework.

By default, the transient, multi-organization, multi-stakeholder environment in which construction projects are delivered is ideal for examining the processes and effects of identity plurality and synergy on project performance. The important role in which identity plays in influencing outcome of projects have been alluded to in the past but never explicitly explored (e.g. Nicolini 2002, Dainty *et al*. 2005) Indeed, up until recently identity research has received no direct attention in construction management (see Phua and Rowlinson 2004, Phua 2004). However, this trend is slowly changing as researchers are starting to address identity and identification concepts and their implications more directly. An instance of this is in Gluch's (2009) paper which suggests that one way in which construction professionals deal with the tension between their formal roles and project practice norms is to develop alternative identities to adapt to the different situations that they find themselves. Gluch goes on to suggest that the different perceptions individual project members have about relational and positional power and sense-making about the projects will in turn have implications on project delivery. Using the identity lens to explore more complex project phenomena is a welcome development and echoes Brown and Phua's (2011: 92) suggestion that because individuals are "grounded in their conceptions of self, analysing their identities can broaden and deepen our understanding of project processes and outcomes" and urging the construction management community to "embrace identity as a means for understanding multi-layered, nuanced, unfolding and dynamic relationships between self, work and organization". At the time of writing, a Special Track on *Identity Crises in Construction* has been scheduled to take place in June 2012 at the CIB Joint International Conference in Montreal, Canada aimed at promoting discussion and generating debate about identity issues in construction.

On a more practical level, construction safety and site performance can directly and urgently benefit from research adopting an identity perspective to gain in-depth understandings of the mediating factors of unsafe worker behaviours. Currently, construction safety research rests predominantly on the view that (un)safe behaviours are acquired through workers' conditioning and interactions with the environment. Thus safety and site performance research overwhelmingly focuses on identifying ways of improving safety climate on sites with recommendations that range from improved management commitment, communication, supervisory support (Mohamed 2002, Abudayyeh *et al*. 2006), to having safety prevention and control system (Aksorn and Hadikusumo 2008) and better company policies and safety training (Teo *et al.* 2005). This line of inquiry however, misses an important, as yet under-explored cognitive motivation that underpins individuals' work attitude and behaviour. Already, work is emerging in this area that usefully informs us that the way site workers interact, the frequency of their interactions, the patterns of interactions and who they interact with, and hence their attitudes toward safety issues are significantly influenced by identity perceptions between themselves, and between themselves and management (e.g. Loosemore *et al*. 2011). The This can be extended to investigate the circumstances in which interactions and cooperation are likely to happen on projects when individual workers or team members encounter instances of negotiating their subgroup identities within larger social or organizational groups (Phua 2004).

Identity and identification concepts can also be usefully mobilised to explore the increasingly popular subject in construction management – i.e. approaches to business ethics and orientations towards corporate social responsibility (CSR) and sustainability. Aside from the economic, legal and institutional imperatives that influence organizational actions and decision making behaviour, the decision makers' views and the types of decisions they make are likely to be influenced by how they perceive themselves in terms of their professional, functional and knowledge identities in the work contexts (Brown and Phua 2011). Mainstream management research has shown for instance, that the behaviour and goals of managers in terms of the CSR domains that they tend to focus on are linked to their specific CSR orientations (Burton and Goldsby 2009) and their value identification and

judgements (Kearins *et al*. 2010). Identity research at the individual-level will similarly open up new research avenues for construction management scholars interested in understanding the socio-psychological drivers of CSR and approaches to ethical business practices in addition to the present strategic and business-oriented ones.

Empowerment

Another performance-linked construct that has been widely analysed is empowerment. In organizational and management literature, empowerment is regarded as a construct that has the potential to positively influence outcomes that benefit both individuals and organizations (e.g. Spreitzer *et al*. 1997, Liden and Tweksbury 1995). Rappaport (1984: 2) indicated that the absence of empowerment is easy enough to spot as it leads to alienation, powerlessness, and helplessness, but at the same time difficult to define positively because it "takes on a different form in different people and contexts and differs across levels of analysis". At the individual-level, empowerment comprises participatory behaviour, motivations to exert control, commitment and improved efficacy. At the organizational level, empowerment is manifested as shared leadership, effective management programs, increased organizational involvement and improved group processes. In defining and offering a clearer perspective on the construct, organizational researchers have distinguished between situational empowerment which involves tasks and management attributes and psychological empowerment which taps into individuals' cognition about their work roles and work environments (Thomas and Velthouse 1990). It is the latter that is regarded as synonymous to intrinsic motivation and which is underpinned by four types of cognitions – meaning, competence, self-determination and impact – all of which combine to determine an individual's level of active orientation towards his/her work role (Spreitzer 1995). Because organizational researchers also recognise that the work or organizational environment can have a powerful influence on individuals' cognition of empowerment, there has been ongoing interest to identify the characteristics and nature of empowering organizational environment such that the constraints and opportunities it

presents for individual cognition and behaviours can be better understood (Spreitzer 1996: 485). This has led to a useful stream of research on the effects of various aspects of work/task design and organizational practices that range from high-involvement systems, task autonomy, job enrichment, modes/span of control to participative climate, on level of empowerment. Empowerment research has also covered team empowerment where the unit of analysis is the team (Kirkman and Rosen 1999). The relevance and appeal for research in team empowerment is prescient as the frequency and occurrences of teams (group of individuals working interdependently to solve problems or achieve goals) in contemporary organizations are increasing.

The construction industry, with its extensive use of both intra- and inter-organizational teams stands to benefit from a deeper understanding of the antecedents, mediator and performance-related consequences of empowerment. Conceptually and methodologically, the composition of teams (i.e. whether it is intra- or inter-organizational teams) might moderate or mediate the relationships between the effects of various work aspects and empowerment. For instance, level of participative work practices might have a stronger influence on empowerment in intra-organizational teams but not necessarily in inter-organizational teams. Researchers interested in such studies should ensure that the nature of these relationships is theoretically grounded and that the research is appropriately designed to draw out such differences. Similarly, because empowerment is not an enduring personality trait generalizable across situations, but rather, a set of cognitions shaped by a work environment" (Spreitzer 1995: 1444), it is imperative for construction management researchers to adopt a person-environment framework when studying empowerment such that the crucial interplay between individual cognition of empowerment and environmental influences can be examined. The conceptualization of the empowerment construct based on the person-environment framework is a significant advancement in empowerment theorizing (Zimmerman 1990) and it highlights existing research gaps in CM literature. Construction management researchers who have tangentially looked at the notion of empowerment have focused on the effects of project environment attributes alone such as nature of tasks, policies and project culture

(e.g. Smithers and Walker 2000, Rowlinson and Cheung 2008) and have ignored the individual cognition/psychological aspect of empowerment. Recently, Tuuli *et al.* (2010a, b) have addressed this deficiency by looking at the mediating role of formal and informal modes of control on the relationship between project team empowerment and project performance. While studies such as these which looked at both the individual and contextual factors are still rare in CM discipline, they add new insights to our current understanding of empowerment, its effects and consequences in relation to project performance. To this end and in line with mainstream empowerment research, we argue that project performance issues cannot be adequately understood by focusing solely on the environmental factors of empowerment while neglecting individual cognition of empowerment.

Trust

One further construct often appearing in CM research and used to explain project outcomes is trust. Indeed, the whole partnering agenda appears to be predicated on the notion that superior project performance can be achieved through improved levels of mutual trust and hence, cooperation between different project organizations and project team members (see Barlow *et al.* 1997, Bennet and Jayes 1995). Like the other three constructs discussed in this paper, trust can be operationalized at multi-level analysis with research either taking a macro perspective of institutional, organizational or inter-firm trust or a micro perspective of interpersonal trust between individuals and groups of individuals. In CM literature, and particularly the partnering literature, the former approach is still predominantly adopted (e.g. Wong *et al*. 2000), resulting in numerous studies devoted to understanding the project drivers and contextual circumstances for partnering to succeed and hence, implying the presence of collaborative relationships and trust (e.g. Anvuur and Kumaraswamy 2007, Yeung *et al*. 2008, Black *et al*. 2000). However, as Bresnen (2009: 923) pointed out, rather than conceptualising partnering as an informal and emergent process which constitutes the interactions and "collective sense-making activity of those directly involved", research effort has primarily been placed on identifying the formal attributes of partnering as they are enacted in practice. In a similar

vein, if as Lau and Rowlinson (2009) suggested that collaborative working relationships between project members are a *behavioural* consequence of interpersonal trust, then in addition to trying to understand the situational-structural factors, research on trust would benefit from conceptualizing it at the individual-level of analysis to enable the study of the behavioural determinants of trust and individual agency to take place. In other words, the social psychological processes underlying the development of trust-based interactions and relationships in projects need to be looked at more seriously than currently is the case (see McAllister 1995).

Developments in the study of trust in broader management and organizational literature have shown that although trust facilitates cooperation and leads to a set of behavioural expectations that reduces the risks of uncertainty associated with future interactions (Mayer *et al*. 1995), it is simultaneously a construct that is greatly influenced by individuals' emotions, moods, attitudes and values (Jones and George 1998). These individual-level factors have significant implications for cooperation and team work across all types of organizational settings because they i) are key determinants of how individuals come to evaluate others and organizations and, ii) result in either positive or negative affect that influence individuals' perceptions of trustworthiness or otherwise about others. Since the affective states of individuals are derived from their emotions and feelings, they provide individuals with powerful signals concerning the changing nature of their ongoing experience of trust with other people in particular situations (Jones and George 1998). Many scholars have now found empirical support showing that individuals use their experience of positive or negative affect as information cues to guide their behaviour such as for instance, their level of cooperativeness with others as well as other citizenship behaviours (e.g. Schwartz and Clore 1988, Kramer and Tyler 1996). Extending from this, studies have also made useful distinctions between types of trust relationships such as conditional or unconditional trust (Jones and George 1998), and cognitive- or affect-based trust (McAllister 1995), their respective antecedents and implications for organizational performance and team work. It is interesting to note that this important body of work is seldom referred to, let alone adopted as a perspective to analyse trust-based relationships in CM

literature. This is a serious omission because it masks a whole range of nuanced, individual-level factors that influence the emergence, development and even the dissolution of trust in projects organizations and teams, hence undermining not just the robustness of research results but hampers cumulative critical knowledge usefully needed to inform practice and research inquiry.

Implicit in many CM studies, researchers seem to continue to make *a priori*, if not anecdotal assumptions that trust between project teams can be induced when the 'right' project environment exists be it through the use of certain type of procurement route/contract, the enactment of certain conducive project culture, the presence of certain management imperatives such as knowledge management, etc. However, organizational researchers such as Sitkin and Roth (1993) have shown that the use of contracts, formal rules and other legalistic mechanisms to create trust has very limited effectiveness. In spite of this formalised contextualisation, and despite the fact that trust relationships can be created through extraneous means it is worth noting that fundamentally organizational trust emerges mostly from informal person-to-person social relationships and interactions in organizations (McAllister 1995). If nothing else, it suggests that focusing on the individuals as the unit of analysis is central to research on trust.

Discussion: towards an agenda for further research

Our intention in this discussion is not to present a fully comprehensive, prescriptive blueprint for theory-building and research. This we argue is neither desirable nor practical. Rather, we attempt to draw out the important connections and highlight the unrealised research opportunities that are associated with examining key performance-related constructs at the individual-level of analysis. More specifically, we outline the scope for construction management researchers interested in such investigations and suggest how an individual-level analysis research agenda might be pursued methodologically. The motivation for this is twofold. First, most research that includes these constructs currently analyse them at the project or organizational level of analysis. Conceptualizing and operationalizing these constructs at the individual-level of analysis are far less developed, if not

largely ignored by CM research community due possibly to the tradition of locating these within the structural-technical framework. Second, we argue that analysing the behaviours of individuals and groups can advance the currently weak empirical and theoretical understanding of the relationship between those behaviours and critical project performance issues. This line of inquiry is so important because it underlines the fact that individuals perceive and interpret the same objective/standard organizational circumstances or protocols differently depending on their personal attributes and how they cognitively make sense about their surroundings and this could in turn bring about unique outcomes in terms of collective behaviours, team dynamics and performance, as well as organizational/project effectiveness and success. This point is linked to a bigger problem in CM research of consistently failing to consider the crucial person-environment interactions in the study of project performance. A lack of exploration in these domains highlights a research landscape that is out of pace with mainstream management and organizational developments.

Connections and scope

The academic discourse of positioning CM research in the proper contexts and social settings (Bresnen *et al*. 2005, Mofatt and Kohler 2008) is simultaneously met by criticisms that CM literature, particularly those related to performance improvement, is in fact highly acontextual (Fernie *et al.* 2006). They refer to a large number of studies that focus on a specific (often narrow) set of variables and excluding from the data collection and subsequent analysis the impact of other potentially influential contextual factors and thus, limiting the generalizability of results (p.96). This raises the question of what constitutes context-relevant research? While Fernie *et al*. (2006) argue that contextually stripping potentially important factors hampers the understanding of complex relationships between actual practice and performance, it remains the case that 'context' is still often viewed as macro-level entities and influences to be addressed from a macro-level perspective, with little regard or attention placed on micro-level factors (Schweber and Harty 2010). This concern

relates to the purpose of this paper of pointing out that even when contextual variables like culture, identity, empowerment and trust are taken into considerations, they are rarely analysed at the micro, individual-level. Notwithstanding the contextual limitations that attend to the current approach, the conceptualizing of these constructs at the macro-level constrains the analysis of many untapped and possible combinations of individual and group attributes that are either antecedents of or have mediating effects on project outcomes. If, according to scholars like Bresnen (2009) that project organizations differ in their social, technical and institutional configurations, it is logical to expect that the individuals, groups and teams that make up these projects to vary equally. Studying these variations must go beyond comparing or testing the effects of obvious demographic differences such as gender, age, level of work experience, type of education or even cultural ethnicity and nationality. Because individual agency and behaviour is inherently shaped by the way people ascribe meanings to events and how they enact their social world, individual attributes are crucial in the analyses of project outcomes. In this sense, a generative research program to guide further conceptual developments would be to determine what contextual configurations of task, social, technical, and institution can be appropriately analysed using individual-level socio-psychological theories to enable us to observe the processes, issues, practices, and outcomes in different project settings. For example, individual variations in cultural orientations mean we can now test the effects of horizontal or vertical individualism/collectivism (Triandis 1995) on levels of participation, decision-making, cooperation and organizational commitment. We can also look at the subtle effect of an individual's activity orientation on their preference for work and task design, and reward structure. This would be in line with developments in cross-cultural research that is shifting away from the conventional conceptualization of individualism and collectivism as situated on opposite ends of a dichotomous continuum. In the case of identity research, we can usefully explore how construction professionals manage the plurality and possibly conflicting identities that come with the overlapping of roles and responsibilities and how the identification process affect their interactions and behaviours with other project members and management with respect to

achieving task goals and project goals. Indeed, the scope for investigating these types of relationships and other individual-level constructs' effects on factors that have significant performance consequence is vast and it would not be feasible to discuss them all here. We are more concerned with suggesting that construction management scholars should expand their research inquiry into these largely untapped areas to provide thought-provoking and innovative solutions to research problems, and to further our understanding of individual and group experiences that are associated with project performance issues.

Methodological possibilities

Rather than providing a critique of the various research methods, we are more interested in offering suggestions to the methodological possibilities that can be pursued in studies that are operationalized at the individual-level of analysis. Where individual-level constructs have been the specific focus of scholars in construction management, most of their conception have been psychologically oriented and their methods positivistic (e.g. Phua and Rowlinson 2004, Tuuli and Rowlinson 2009). This mirrors the hypothetic-deductive tradition found in a large number of similar studies in mainstream management, organization and sub-branches of psychology literature, and it will continue to be widely used in future studies where the focus is on applying or developing psychometrically robust measures to explore, quantify and determine the relationships between variables of interest in context-specific situations. For example, studies like these have greatly advanced our understanding of how and why different dimensions within certain constructs (e.g. conditional/unconditional trust, cognitive/affective identity) influence outcomes differently. Such studies, when designed and executed properly can be replicated across different times and locations to generate useful empirical comparative data. Data sources and analysis are not necessarily confined to quantitative means as it is possible, if not desirable for researchers to derive data sources through interviews or observations. The rationalization and articulation of the context and the level of analysis to be studied are essential aspects of such research.

Organizational behaviour and management literature also feature studies that adopt a sociologically informed approach which take a discursive and interpretive stance. For example, in identity research, given the interest in exploring the nature of subjectively construed identity as the set of stories about the self that an individual narrates to the self and to others, it makes most sense to investigate these using interpretive methods (Brown and Phua 2011). In-depth case study, ethnographic and autoethnographic work focused on germane identity issues such as those related to individuals' self-conception with respect to their role, environment and professionalism may prove highly productive. Semi-structured interviews in which actors are encouraged to talk at length about who they are and who they wish to become are the dominant means for data collection by discursive sociologists and psychologists. Biographies and autobiographies are another useful source of data. There are multiple ways in which identity stories may be analyzed. While most researchers prefer to scrutinize identity stories for common themes, there are some specific frameworks from literary theory (e.g. McAdams 1996) that can aid analysis. In other areas of construction research, Pink *et al.* (2010) have used an ethnographic approach to understand the qualities and patterns of the social relationships that develop on construction sites in order to shed light on how individual construction workers communicate with managers and each other and how they stay safe on site. That being said, in the end, construction management researchers will need to adopt the appropriate techniques to deal adequately with their data based on the contexts in which they are studying.

Conclusions

In this paper, we have only included four performance-related constructs and although they do not constitute a holistic agenda for CM research, we argue that they are important themes to be taken into account not least because they are constructs that are already often used in studies related to project performance but more importantly because they are constructs that have been widely researched at the individual-level of analysis as having significant implications for organizational

performance. To avoid being overly prescriptive, we included these constructs mainly as a way of illustrating how research at the individual-level of analysis can be developed and hope it serves as a catalyst for construction management researchers to broaden the scope of such research to cover other relevant individual-level and socio-psychological constructs that have hitherto been absent in CM research such as individual traits, motivation, personality, needs, state etc. In highlighting the existing gap in CM literature we are at the same time encouraged by evidence of a gradually growing number of individual-level studies appearing in journals. These and future works will go a long way to help define and enhance the legitimacy of the field.

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