The psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work

Douglas R. May[1]*, Richard L. Gilson[2] and Lynn M. Harter[3]
[1]Department of Management, University of Nebraska-Lincoln, USA
[2]Department of Management and Marketing, Northern Kentucky University, USA
[3]School of Communication Studies, Ohio University, USA

Building on Kahn's (1990) ethnographic work, a field study in a U.S. Midwestern insurance company explored the determinants and mediating effects of three psychological conditions – meaningfulness, safety and availability – on employees' engagement in their work. Results from the revised theoretical framework revealed that all three psychological conditions exhibited significant positive relations with engagement. Meaningfulness displayed the strongest relation. Job enrichment and work role fit were positively linked to psychological meaningfulness. Rewarding co-worker and supportive supervisor relations were positively associated with psychological safety, whereas adherence to co-worker norms and self-consciousness were negatively associated. Psychological availability was positively related to resources available and negatively related to participation in outside activities. Finally, the relations of job enrichment and work role fit with engagement were both fully mediated by the psychological condition of meaningfulness. The association between adherence to co-worker norms and engagement was partially mediated by psychological safety. Theoretical and practical implications related to psychological engagement at work are discussed.

> To explore the challenge to the human soul in organizations is to build a bridge between the world of the personal, subjective, and even unconscious elements of individual experience and the world of organizations that demand rationality, efficiency, and personal sacrifice . . . we must be willing to shift our viewpoint back and forth between what organizations want of people and what constitutes human complexity: the contradictory nature of human needs, desires, and experience. (Briskin, 1998, p. xii.)

This quote from Briskin (1998), an organizational consultant, reflects the challenges that managers and researchers of organizations face as they seek to understand and

*Correspondence should be addressed to Douglas R. May, Associate Professor and Director, Program in Business, Ethics, and Society, Department of Management, University of Nebraska – Lincoln, Lincoln, NE 68588-0491, USA (e-mail: dmay1@unl.edu).

unleash the human spirit in organizations. The human spirit in this context refers to that part of the human being which seeks fulfilment through self-expression at work. We believe that for the human spirit to thrive at work, individuals must be able to completely immerse themselves in their work. That is, they must be able to engage the cognitive, emotional and physical dimensions of themselves in their work. Thus, we began this research project with a passion to understand why some individuals engage their selves in their work, whereas others become alienated and disengage from their work. In our research approach, we drew from traditions in both the functionalist and the humanistic paradigms (Aktouf, 1992). Specifically, the purpose of our study was to examine the role that three psychological conditions play in employees' work engagement.

Conceptualization of engagement

Engagement at work was conceptualized by Kahn (1990) as the 'harnessing of organizational members' selves to their work roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances' (p. 694). For Kahn, self and role 'exist in some dynamic, negotiable relation in which a person both drives personal energies into role behaviors (self-employment) and displays the self within the role (self-expression)' (p. 700). Such engagement serves to fulfil the human spirit at work. Alternatively, disengagement is viewed as the decoupling of the self from the work role and involves people withdrawing and defending themselves during role performances. Such 'unemployment' of the self in one's role is considered robotic or apathetic behaviour (Hochschild, 1983).

Engagement is most closely associated with the existing constructs of job involvement (Brown, 1996) and 'flow' (Csikszentmihalyi, 1990) in the social sciences literature. First, job involvement is defined as 'the degree to which the job situation is central to the person and his [or her] identity' (Lawler & Hall, 1970: 310–311). Kanungo (1982) maintained that job involvement is 'a cognitive or belief state of psychological identification' (p. 342). Job involvement is thought to depend on both need saliency and the potential of a job to satisfy these needs. Thus, job involvement results from a cognitive judgment about the need satisfying abilities of the job. Jobs in this view are tied to one's self-image. Engagement differs from job involvement in that it is concerned more with how the individual employs his/her self during the performance of his/her job. Furthermore, engagement entails the active use of emotions and behaviours, in addition to cognitions. Finally, engagement may be thought of as an antecedent to job involvement in that individuals who experience deep engagement in their roles should come to identify with their jobs.

The second related construct to engagement in organizational behaviour is the notion of 'flow' advanced by Csikszentmihalyi (1975, 1990). Csikszentmihalyi (1975) defines flow as the 'holistic sensation that people feel when they act with total involvement' (p. 36). For Csikszentmihalyi, flow is the state in which there is little distinction between the self and environment. When individuals are in a 'flow' state, little conscious control is necessary for their actions. Individuals narrow their attention to specific stimuli. They lose a sense of consciousness about their 'selves' as they meld with the activity itself. Flow experiences also provide feedback that is automatically taken into account by the individual. Finally, individuals in a flow experience need no external rewards or goals to motivate them as the activity itself presents constant challenges. Csikszentmihalyi (1975) notes that such flow conditions are most readily

experienced in certain activities, such as games and creative activities in art and science. Studies of flow at work reveal that managers and supervisors tend to experience more flow than clerical or blue-collar workers (Csikszentmihalyi, 1990). Flow generally tends to be associated with successful experience with challenging tasks.

Although both engagement and flow have self-employment underpinnings (Kahn, 1990), engagement differs from the concept of flow in that flow has been conceptualized and measured primarily as cognitive involvement with an activity and represents a unique 'peak' experience of total cognitive absorption. However, Kahn (1990) theorized that individuals *vary* in the degree to which they immerse themselves in their roles. Further, he explicitly argued that individuals would use all aspects of themselves – cognitive, emotional and physical. For example, expression of emotion at work should facilitate engagement in work and make the connections with others at work more meaningful (Kahn, 1990; Waldron, 1994). Work by Hochschild (1983) and others (Morris & Feldman, 1996) suggests that when there is a lack of congruence between one's felt emotion and the organizationally desired emotion, individuals will experience emotional labour and potentially disengage from their work. Finally, engagement also necessarily entails the physical energies employed by individuals to accomplish their roles. Such energies help bring the self into a role.

Importance of engagement

Engagement is important for managers to cultivate given that disengagement, or alienation, is central to the problem of workers' lack of commitment and motivation (Aktouf, 1992). Meaningless work is often associated with apathy and detachment from one's work (cf. Thomas & Velthouse, 1990). In such conditions, individuals are thought to be estranged from their selves (Seeman, 1972) and restoration of meaning in work is seen as a method to foster an employee's motivation and attachment to work. These views demonstrate both the humanistic and practical reasons for providing meaningful work to individuals – personal fulfilment and motivational qualities of such work. Indeed, much of the recent literature on empowerment and employee involvement focuses on providing meaningful work to employees to facilitate both their motivation and personal growth (cf. Spreitzer, Kizilos, & Nason, 1997).

Although little work exists on Kahn's conceptualization of the engagement construct, Britt, Adler, and Bartone (2001) found that engagement in meaningful work can lead to perceived benefits from the work. Other research using a different measure of engagement (i.e. involvement and enthusiasm) has linked it to such variables as employee turnover, customer satisfaction–loyalty, safety, and to a lesser degree, productivity and profitability criteria (Harter, Schmidt, & Hayes, 2002). Thus, there are practical as well as humanistic reasons that managers and researchers of organizations should be concerned with employees' engagement in work.

Contributions of the research

In Kahn's (1990) ethnographic study of a summer camp and architectural firm, he focused on how 'people's experience of themselves and their work contexts influenced moments of personal engagement and disengagement' (p. 702). He analysed conditions of each reported moment of engagement and induced three psychological conditions that generalized across the moments. Essentially, he argued that people asked themselves three fundamental questions in each role situation:

(i) How *meaningful* is it for me to bring myself into this performance; (ii) How *safe* is it to do so?; and (iii) How *available* am I to do so? From an analysis of his interviews, he generated the determinants for these psychological conditions.

Although engagement is both humanistically and practically important, we still know little about how the elements of Kahn′s theoretical framework contribute to the three psychological conditions and employees′ engagement at work. This research study contributes to extant literature by exploring the relations among these elements. It also addresses similar calls for research to investigate the psychological processes that mediate the linkages between situational antecedent factors and the related construct, job involvement (Brown, 1996). If we understand the psychological foundations of engagement, we may be able to better *predict* why some individuals come to psychologically identify with their jobs.

Below we outline some of the theoretical and empirical work on Kahn′s (1990) proposed antecedents of the psychological conditions – meaningfulness, safety and availability. Their viability as potential determinants of their respective psychological conditions is discussed and hypotheses developed.

Psychological meaningfulness

The psychological condition of experienced meaningfulness has been recognized by researchers as an important psychological state or condition at work (e.g., Hackman & Oldham, 1980; May, 2003). Indeed, Frankl (1992) has argued that individuals have a primary motive to seek meaning in their work. Meaningfulness is defined here as the value of a work goal or purpose, judged in relation to an individual′s own ideals or standards (Hackman & Oldham, 1980; May, 2003; Renn & Vandenberg, 1995). Lack of meaning in one′s work can lead to alienation or 'disengagement' from one′s work (Aktouf, 1992). The provision of work that is experienced as meaningful by employees should facilitate both their personal growth and their work motivation (Spreitzer *et al.*, 1997). We explore here the theoretical and empirical foundations of the workplace dimensions theorized to influence psychological meaningfulness, namely, job enrichment, work role fit and co-worker relations.

Job enrichment

Based on his ethnographic experiences, Kahn (1990) maintained that the characteristics of one′s job could influence the degree of meaningfulness an employee experienced at work. Recent work by researchers of job design (Johns, Xie, & Fang, 1992; May, 2003; Renn & Vandenberg, 1995) demonstrates that enrichment of jobs in the five core job dimensions of the Job Characteristics Model (Hackman & Oldham, 1980) can significantly influence the meaningfulness experienced by employees. However, it should be noted that the majority of studies on job design *fail* to examine the proposed relation between job characteristics and the psychological state of meaningfulness (Fried & Ferris, 1987). Based on this research, it is expected that job enrichment will be positively related to psychological meaningfulness.

Work role fit

Researchers have long been interested in the relation of the individual employee to the role that he/she assumes in an organization (Kristof, 1996). A number of authors argue that a perceived 'fit' between an individual′s self-concept and his/her role will lead to an experienced sense of meaning due to the ability of the individual to express his/her

values and beliefs (Brief & Nord, 1990; Shamir, 1991). Shamir (1991) also maintains that human beings are self-expressive and creative, not just goal-oriented. That is, people seek out work roles that allow them to behave in a way that expresses their authentic self-concepts. Recent research by May (2003) confirms this perspective. He found that work role fit did indeed have a significant influence on employees' experienced meaningfulness in a manufacturing environment. Related research by Britt (1999) on the Triangle Model of Responsibility found that the 'identity–prescription' link (i.e. 'the degree to which a set of prescriptions or rules are relevant to one's identity or role' [p. 697]) was associated with an individual's level of engagement (i.e. responsibility and commitment). Taken as a whole, this research suggests that work roles that are aligned with individuals' self-concepts should be associated with a more meaningful work experience.

Co-worker relations
Individuals who have rewarding interpersonal interactions with their co-workers also should experience greater meaning in their work. Literature in organizational behaviour recognizes the relatedness needs individuals possess (Locke & Taylor, 1990). When individuals are treated with dignity, respect and value for their contributions, and not simply as the occupant of a role, they are likely to obtain a sense of meaningfulness from their interactions. Individuals also derive meaning from the social identities they receive from salient group memberships. To the extent that co-worker interactions foster a sense of belonging, a stronger sense of social identity and meaning should emerge. Alternatively, loss of a social identity should be associated with meaninglessness (Florian & Snowden, 1989). Qualitative (Isaksen, 1995; Kahn, 1990) and quantitative (May, 2003) research seems to support a relation between rewarding co-worker interactions and meaningfulness. Kahn also suggested that client relations for some individuals (e.g. camp counsellors) may play a role in providing a meaningful work experience. We chose to narrow the scope of our study to co-worker interactions, because the employees in the sample did not have the same depth of quality of client relations as those studied by Kahn (1990).

Based on the above discussion of the proposed determinants of psychological meaningfulness, the first set of hypotheses of the study is offered.

> *Hypothesis 1a:* Job enrichment will be positively related to psychological meaningfulness.
> *Hypothesis 1b:* Work role fit will be positively related to psychological meaningfulness.
> *Hypothesis 1c:* Co-worker relations will be positively related to psychological meaningfulness.

Psychological safety
Psychological safety is defined as 'feeling able to show and employ one's self without fear of negative consequences to self-image, status, or career' (Kahn, 1990, p. 708). Individuals feel 'safe' when they perceive that they will not suffer for expressing their true selves at work. In a safe environment, individuals understand the boundaries surrounding acceptable behaviours. However, unsafe conditions exist when situations are ambiguous, unpredictable and threatening.

The psychological condition of safety and its antecedents and outcomes have received relatively little attention in the literature to date. We draw here on the recent research on safety by Edmondson (1996, 1999) and the literature on trust in organizational behaviour to explore the proposed connections (e.g. Whitener, Brodt,

Korsgaard, & Werner, 1998). Supervisory and co-worker behaviours that are supportive and trustworthy in nature are likely to produce feelings of safety at work. The determinants of psychological safety explored include supervisory relations, co-worker relations and behavioural norms.

Supervisor relations

The relation with one's immediate manager can have a dramatic impact on an individual's perceptions of the safety of a work environment. A supportive, and not controlling, relation should foster perceptions of safety (Edmondson, 1999) and enhance employee creativity (Deci, Connell, & Ryan, 1989; Oldham & Cummings, 1996). Supervisors who foster a supportive work environment typically display concern for employees' needs and feelings, provide positive feedback and encourage them to voice their concerns, develop new skills and solve work-related problems (Deci & Ryan, 1987). Such supportive actions enhance employee self-determination and interest in their work. Employees who are self-determined experience 'a sense of choice in initiating and regulating one's own actions' (Deci *et al.*, 1989, p. 580). These individuals are likely to feel safer to engage themselves more fully, try out novel ways of doing things, discuss mistakes and learn from these behaviours when they are in such supportive environments (Edmondson, 1996, 1999).

Supervisory supportiveness of employees' self-determination and congruent perceptions between supervisors and employees have both been linked with enhanced trust overall (Britt, 1999; Deci *et al.*, 1989). Five categories of behaviour have been linked with employees' perceptions of managerial trustworthiness: behavioural consistency, behavioural integrity, sharing and delegation of control, communication (accuracy, explanations and openness) and demonstration of concern (Whitener *et al.*, 1998). Behavioural consistency, or predictability, involves behaving in the same manner across time and contexts. Behavioural integrity entails consistency between words and deeds. Sharing of control involves employee participation in decision making. Open communication fosters accurate explanations for managerial actions. Finally, benevolence involves consideration, protecting employees' interests and refraining from exploitation (Mayer, Davis, & Schoorman, 1995; McAllister, 1995). In summary, these trustworthy supervisory behaviours are expected to lead to feelings of psychological safety and a willingness to invest themselves at work.

Co-worker relations

Interpersonal relations among employees that are supportive and trusting should also foster psychological safety (Kahn, 1990). The bases for interpersonal trust can be either cognitive or affective (McAllister, 1995). Cognitive-based trust concerns the reliability and dependability of others. Affective trust is rooted in the emotional relationships between individuals. Individuals who trust each other emotionally generally express concern for the welfare of each other, believe in the 'intrinsic virtue' of such relationships and are willing to make future emotional investments in the relationship (Pennings & Woiceshyn, 1987). In this research, we were interested in examining how supportive and affective trust-building co-worker relations could lead to greater psychological safety and engagement at work. In a related study, Edmondson (1996) found that quality of relations in work units had an impact on employees' shared beliefs regarding whether mistakes would be held against them (i.e. psychological safety). Thus, we expected that co-workers who support each other during tough times at work, have mutual respect for one another and value each others' contributions

engender trust and heightened perceptions of psychological safety and engagement. Kahn (1990) also proposed that unconscious roles played out in groups influence psychological safety. We felt that an investigation of these unconscious roles was beyond the scope of this quantitative study.

Co-worker norms

Norms within groups and organizations tend to govern behaviour, attitudes and the emotional dimensions of work (Hochschild, 1983). Kahn (1990) suggests that individuals who stay within the boundaries of appropriate behaviours will feel safer at work. This means not questioning the habitual routines of behaviour, thought or emotions expressed by one's co-workers. Our study focused on co-worker related norms instead of broader organizational norms because these individuals likely influence employees' actions the most.

Norms have been the subject of many theoretical and empirical studies in the groups area (cf. Barker, 1993; Feldman, 1984). Feldman (1984) defines group norms as 'the informal rules that groups adopt to regulate and regularize group members' behaviors' (p. 47). Norms are generally theorized to be enforced if: (i) they facilitate a group's survival, (ii) make the behaviours expected of group members more predictable, (iii) help the group avoid embarrassing interpersonal problems, and (iv) express the central values of the group and clarify what is distinctive about the group's identity. Although group norms often serve these important processes, the normative processes associated with the concertive control in self-managing teams can have quite negative consequences for group members (Barker, 1993). According to Barker, teams develop concertive control through: (i) a value-based consensus of ethical rational action at work; (ii) identification with these shared values and the transfer of authority to the team's value system; (iii) behavioural norms that are methodically developed based on these values; (iv) older team members' expectations that new members to identify with, and act in accordance, with these norms; (v) peer pressure to enforce these normative rules; and (vi) the formalization and sharing of these normative rules (see Barker, 1993, p. 434). Thus, Barker maintains that normative rules that develop in teams actually serve to tighten Weber's 'iron cage' of the rational rules of bureaucracy because resisting this new form of control risks employees' human dignity as team members. Indeed, Edmondson (1999) similarly maintains that such cohesion in groups reduces the willingness to disagree or challenge others' views, indicating a lack of interpersonal risk taking. Thus, although some norms may provide structural boundaries for appropriate behaviours (Kahn, 1990), we expect that normative rules in teams that employees feel they *must* follow should lead to feelings of *less* psychological safety than when employees feel they have more flexibility in their behaviours.

Based on the above discussion, the second set of hypotheses is offered.

> Hypothesis 2a: Supportive supervisor relations will be positively related to psychological safety.
> Hypothesis 2b: Rewarding co-worker relations will be positively related to psychological safety.
> Hypothesis 2c: Adherence to co-worker norms will be negatively related to psychological safety.

Psychological availability

Psychological availability is defined as an individual's belief that s/he has the physical, emotional or cognitive resources to engage the self at work (Kahn, 1990). In essence, it assesses the readiness, or confidence, of a person to engage in his/her work role given

that individuals are engaged in many other life activities. Factors that may influence such beliefs include the individual's resources, work role insecurities and outside activities.

Resources

Individuals bring their physical, emotional and cognitive resources to bear on role-related tasks when they engage themselves at work. Most jobs require some level of *physical* exertion and some demand intense physical challenges that result in injuries (May & Schwoerer, 1994). Even sitting at work can put enormous stress on the back (Hollenbeck, Ilgen, & Crampton, 1992). Individuals vary in their abilities to meet these physical demands based on their strength, stamina and flexibility. Depletion of physical resources necessarily results in physical disengagement from one's work role.

Emotional demands of jobs also vary in type and scope. Some jobs, particularly service sector ones, require much emotional labour (Hochschild, 1983; Sutton, 1991). Morris and Feldman's (1996) theoretical work on the dimensions of emotional labour postulates that, not only does emotional dissonance lead to depletion of emotional resources (i.e. exhaustion), but the frequency of the emotional display, duration and intensity of such displays and variety of expressed emotions also decrease these resources.

Finally, although not explicitly included in Kahn's (1990) model, *cognitive* demands and resources also vary by job and person, respectively. For example, researchers have explored the 'need for cognition' that some people have for complex tasks (Thompson, Chaiken, & Hazlewood, 1993). However, some roles require more information processing than individuals can handle. They become overwhelmed at the amount of information or 'balls in the air' and lack the ability to think clearly. This is described as role overload in the stress literature (e.g. Ganster & Schaubroeck, 1991). In summary, it is expected that the presence of resources (physical, emotional and cognitive) will lead to greater availability and engagement.

Work role security

Security in one's work role is influenced by self-consciousness in Kahn's (1990) framework. Individuals may experience heightened *self-consciousness* about how others perceive and judge them (Fenigstein, Scheier, & Buss, 1975). Such preoccupations are likely to distract individuals because they focus on external rather than internal cues (Goffman, 1959). Indeed, some individuals become preoccupied with the impression they leave on others (Schlenker, 1980) and others tend to monitor the social environment and adapt their behaviours to it.

Outside activities

Activities outside the workplace have the potential to draw away individuals' energies from their work and make them less psychologically available for their work roles (Hall & Richter, 1989). These activities include membership of outside organizations. Time demands due to membership of outside organizations, such as school, other jobs and volunteer activities, are likely to distract an individual's attention so that he/she is unable to be available to focus on his/her role tasks. Such a perspective in rooted in what some authors refer to as a resource drain perspective (Edwards & Rothbard, 2000). However, in a study of family and work engagement, Rothbard (2001) recently found that family engagement can have positive effects on work engagement for

women. Such an 'enrichment effect' reinforces the benefits of multiple role involvement which may lead to 'energy expansion' (Rothbard, 2001). The current research extends this study to investigate whether time demands for outside organizational activities have depletion or enriching effects on work engagement.

Based on the above discussion of the proposed determinants of availability, the third set of hypotheses is offered for this study.

> *Hypothesis 3a:* Resources will be positively related to psychological availability at work.
> *Hypothesis 3b:* Self-consciousness will be negatively related to psychological availability at work.
> *Hypothesis 3c:* Outside activities will be negatively related to psychological availability at work.

Psychological conditions and engagement

The three psychological conditions explored here – meaningfulness, safety and availability – are theorized to influence the degree to which one engages in his/her role at work. As noted above, meaningfulness has to do with how valuable a work goal is in relation to an individual's own ideals or standards. Individuals who believe that a given work role activity is personally meaningful are likely to be motivated to invest themselves more fully in it. Indeed, previous research in the job design area has demonstrated that meaningfulness is linked with internal work motivation (Fried & Ferris, 1987; Renn & Vandenberg, 1995). We extend this linkage to work engagement here.

Second, psychological safety should lead to engagement at work because it reflects one's belief that s/he can employ his/herself without fear of negative consequences. Thus, employees are more likely to take risks that express their true selves. Individuals in these environments should actively engage their interest in their tasks and try novel ways of doing role-related tasks (Amabile, 1983). However, employees in unsafe environments characterized by ambiguous, unpredictable and threatening conditions, are likely to disengage from their work and be wary of trying new things.

Finally, individuals must believe that they have the necessary physical, emotional and cognitive resources in order to immerse themselves in their roles. Individuals should be more willing to engage themselves in their roles if they are confident that they have the energy to do so. The stress literature strongly suggests that those who experience overload tend to withdraw or disengage from work, perhaps in order to replenish their resources (Ganster & Schaubroeck, 1991). Based on the discussion above, the fourth major set of hypotheses is offered.

> *Hypothesis 4a:* Psychological meaningfulness will be positively related to engagement at work.
> *Hypothesis 4b:* Psychological safety will be positively related to engagement at work.
> *Hypothesis 4c:* Psychological availability will be positively related to engagement at work.

Mediating effects of the psychological conditions

Finally, this study explores the research question of whether the three psychological conditions actually explain the effects of their determinants on individuals' engagement at work. That is, do these psychological conditions capture how work environments foster engagement of the human spirit at work? Research on both job enrichment and job involvement has neglected to examine such psychological conditions (Brown, 1996; Fried & Ferris, 1987) even though they could help us better understand how individuals engage their selves at work. This research addresses this void in the literature. Based on the discussion of the research above, we believe

that these psychological processes will explain the influence of the work place characteristics on engagement. Thus, the final set of hypotheses is offered.

> *Hypothesis 5a:* Experienced meaningfulness will mediate the relation between its determinants (i.e. job enrichment, work role fit and co-worker relations) and engagement at work.
> *Hypothesis 5b:* Experienced safety will mediate the relation between its determinants (i.e. co-worker relations, supervisor relations and co-worker norms) and engagement at work.
> *Hypothesis 5c:* Experienced availability will mediate the relation between its determinants (i.e. resources, self-consciousness and outside activities) and engagement at work.

Method

Research design, setting and participants

The research design was a field study using survey methodology. The study was conducted at a large insurance firm located in the Midwestern, USA. The questionnaire was designed to measure the participants' perceptions about themselves, their jobs, supervisors and co-workers.

Participants in the survey included employees and managers across all departments in the administration division of the organization. All employees in this division were invited by the director to participate in the survey. The management set aside paid time during regular working hours to encourage and facilitate participation. Two hundred and seventy employees were invited to fill out the survey. Two hundred and thirteen employees attended the designated sessions and completed the survey, for a response rate of 79%.

Participants worked in variety of broad occupational categories associated with the insurance industry: claims processing, premium and enrolment, claims support, telephone customer service representative, administrative support, information systems and employee education. The mean age of the respondents was 35 years and 86.7% were female. The mean education level was 2.5 years of college.

Procedure

The research team administered the survey in two separate sessions on a single day. The team instructed the attendees that the purpose of the study was to gather information about how employees react to various aspects of their work and work situations. The team assured the attendees that all responses would be kept confidential. The team reiterated that participation in the study was voluntary and that employees should feel no pressure to participate. Employees choosing not to participate were given the choice of leaving the room or remaining quietly seated.

Variable measures

The measures for the research are described below. All items used for the scale measures discussed below are located in the Appendix. All scales used a 5-point agreement–disagreement Likert format with 1=Strongly Disagree and 5=Strongly Agree unless otherwise noted.

Psychological engagement

Psychological engagement was measured by averaging 13 items (α=.77) developed for this study. The items reflect each of the three components of Kahn's (1990)

psychological engagement: cognitive, emotional and physical engagement. Because Kahn (1990) originally theorized that there may be three distinct dimensions of engagement, we conducted an exploratory principal components factor analysis of 24 items initially developed for the study. Because three separate and reliable scales representing cognitive, emotional and physical engagement did not emerge from our data, we chose to use an overall scale with fewer items that demonstrated good reliability and had some balance across the three forms of engagement.

Psychological meaningfulness
Six items (α=.90) drawn from Spreitzer (1995) and May (2003) measured the degree of meaning that individuals discovered in their work-related activities.

Psychological safety
Psychological safety was measured by averaging 3 items (α=.71) based on Kahn's (1990) work. These items assessed whether the individual felt comfortable to be themselves and express their opinions at work or whether there was a threatening environment at work.

Psychological availability
The confidence individuals had regarding their ability to be cognitively, physically and emotionally available for work was measured by averaging 5 items (α=.85) based on Kahn's (1990) discussion.

Job enrichment
Job enrichment was measured by averaging 15 items (α=.85) from the Job Diagnostic Survey (JDS; Hackman & Oldham, 1980) to obtain an overall indicator of job enrichment (Fried & Ferris, 1987). The JDS uses three items for each of the five job-related dimensions: skill variety, task identity, task significance, autonomy and feedback.

Work role fit
Work role fit was measured by averaging 4 items (α=.92) from May (2003) which directly measured individuals' perceived fit with their jobs and self-concept (Kristof, 1996).

Rewarding co-worker relations
Co-worker relations was measured by averaging 10 items (α=.93) from May (2003). These items measured such things as whether co-workers valued an individual's input, valued who they were as individuals and trusted one another.

Supportive supervisor relations
Supportive supervisor relations was measured by averaging 10 items (α=.95). The first six presented in the Appendix were drawn from Oldham and Cummings (1996) and the last four from Butler (1991).

Co-worker norm adherence
The degree to which individuals follow co-worker norms and do what is expected of them by co-workers was measured by averaging 3 items (α=.61) developed for this study.

Resources

The degree to which individuals possess the resources to become available for engagement was assessed by averaging 8 items (α=.91) that were developed for this study.

Self-consciousness

Self-consciousness was measured by averaging 3 items (α=.83). These items measured public self-consciousness as opposed to private self-consciousness (Fenigstein *et al.*, 1975).

Outside activities

The degree of involvement in outside organizations was measured using a single item: 'How many hours per week do you participate in organizations other than (the company's name) (i.e. other jobs, church, school, girl scouts, volunteering, etc.)?' The choices were: 1=1–5 hours, 2=6–10 hours, 3=11–15 hours, 4=16–20 hours, and 5=21+ hours.

Data analysis

To confirm that our measures were distinct from one another, we followed Edmondson (1999) and examined both the antecedent and outcome sections of our model. To this end, we first placed all of the independent and mediating variable items in a principal components factor analysis with oblique rotation and used .40 as our cut-off point for cross-loadings. This factor analysis of the exogenous variables identified 14 factors with eigenvalues >1.00. The largest factor explained 23.9% of the variance and was composed of all the supervisor relations items. All scale items loaded on their respective constructs and did not cross-load on the other factors. The job enrichment scale items loaded on four factors instead of the five-factor model, but Fried and Ferris (1987) argue that these subscales should be averaged anyway as an indicator of overall job enrichment. Second, a principal components factor analysis using oblique rotation for the engagement outcome variable yielded four factors with the largest explaining only 28.1% of the variance. As noted earlier, because three reliable theorized dimensions of engagement were not present and each item contributed positively to the Cronbach's alpha, all items were averaged for the engagement scale. Overall, the results of these factor analyses lend support to the discriminant validity of our measures and did not suggest that common method variance was a problem in our data according to Harmon's one-factor test for common method bias (Podsakoff & Organ, 1986).

We performed path analysis using LISREL-8.51 to test our hypotheses and the overall model fit. We chose not to include a measurement model with our path analysis primarily because the number of observations in our model was too small to accommodate the additional parameters required by the measurement model. However, we did follow recommendations to account for measurement error in our path analysis using the LISREL program (Joreskog & Sorbom, 1993; Kline, 1998), rather than assuming the variables had been measured without error.

We conducted two separate sets of analyses for this study. The primary set of analyses involved testing our hypotheses and assessing the degree of fit for the hypothesized model. We estimated path coefficients using the maximum likelihood (ML) method in LISREL. A supplemental set of analyses involved post-hoc development of a revised model with improved fit to the data.

Results

Descriptive statistics

The means, standard deviations and bivariate correlations are shown in Table 1. Overall, employees experienced moderate levels of psychological engagement, meaningfulness, safety and availability. They reported moderate levels of job enrichment, relatively low levels of work role fit, moderately positive relations with their co-workers and slightly negative relations with their supervisors. Employees reported moderate levels of self-consciousness and perceived that they had adequate personal resources to perform their jobs.

Evaluating the proposed model

Hypotheses 1a–c

Figure 1 shows the standardized path coefficients estimated by LISREL for the proposed theoretical model. For the portion of the model predicting meaningfulness, two of the three path coefficients were significant and had the expected sign. Job enrichment (H1a) and work role fit (H1b) both had significant positive relations with meaningfulness. The ML-estimated equation accounted for a relatively large proportion of the variance in meaningfulness (R^2=.62). These results provide partial support for Hypotheses 1a–c.

Hypotheses 2a–c

For the portion of the model predicting safety, all three path coefficients were significant. Supervisor relations (H2a) and co-worker relations (H2b) both had significant positive relations with safety. Adherence to co-worker norms (H2c) had a significant negative association with safety. The ML-estimated equation accounted for a substantial proportion of the variance in safety (R^2=.39). These results provide support for Hypotheses 2a–c.

Hypotheses 3a–c

For the portion of the model predicting availability, two of the three path coefficients were significant and had the expected sign. Resources (H3a) was positively related with availability. Outside activities (H3c) was negatively related with availability. Self-consciousness (H3b) was not related with availability. The ML-estimated equation accounted for a substantial proportion of the variance in availability (R^2=.47). These results provide partial support for Hypotheses 3a–c.

Hypotheses 4a–c

For the portion of the model predicting engagement, two of the three path coefficients were significant and had the expected sign. Meaningfulness (H4a) and safety (H4b) were positively related with engagement. Availability (H4c) was not related with engagement. The ML-estimated equation accounted for a relatively large proportion of the variance in engagement (R^2=.63). These results provide partial support for Hypotheses 4a–c.

Hypotheses 5a–c

We hypothesized that meaningfulness, safety and availability would mediate the relationships between their respective antecedents and engagement. We performed a

Table 1. Means, standard deviations and intercorrelations among all variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Engagement	3.40	.54											
2. Meaningfulness	3.61	.72	.63*										
3. Safety	3.28	.86	.35*	.29*									
4. Availability	3.82	.71	.36*	.44*	.45*								
5. Job Enrichment	3.49	.63	.47*	.56*	.35*	.28*							
6. Work Role Fit	2.58	.98	.56*	.66*	.33*	.34*	.47*						
7. Co-worker Relations	3.32	.74	.15*	.26*	.16*	.16*	.21*	.29*					
8. Supervisor Relations	2.94	.99	.45*	.39*	.55*	.41*	.42*	.48*	.11				
9. Co-worker Norms	3.33	.67	−.13	.02	−.19*	−.09	−.10	.05	.19*	−.14*			
10. Resources	3.00	.85	.14*	.35*	.40*	.58*	.28*	.31*	.21*	.35*	.03		
11. Self-Consciousness	2.94	1.00	.10	−.12	−.27*	−.33*	−.16*	.02	−.15*	−.08	.09	−.41*	
12. Outside Activities	1.19	.34	−.20*	−.09	−.25*	−.19*	−.25*	−.12	−.13	−.17*	−.01	−.10	.13

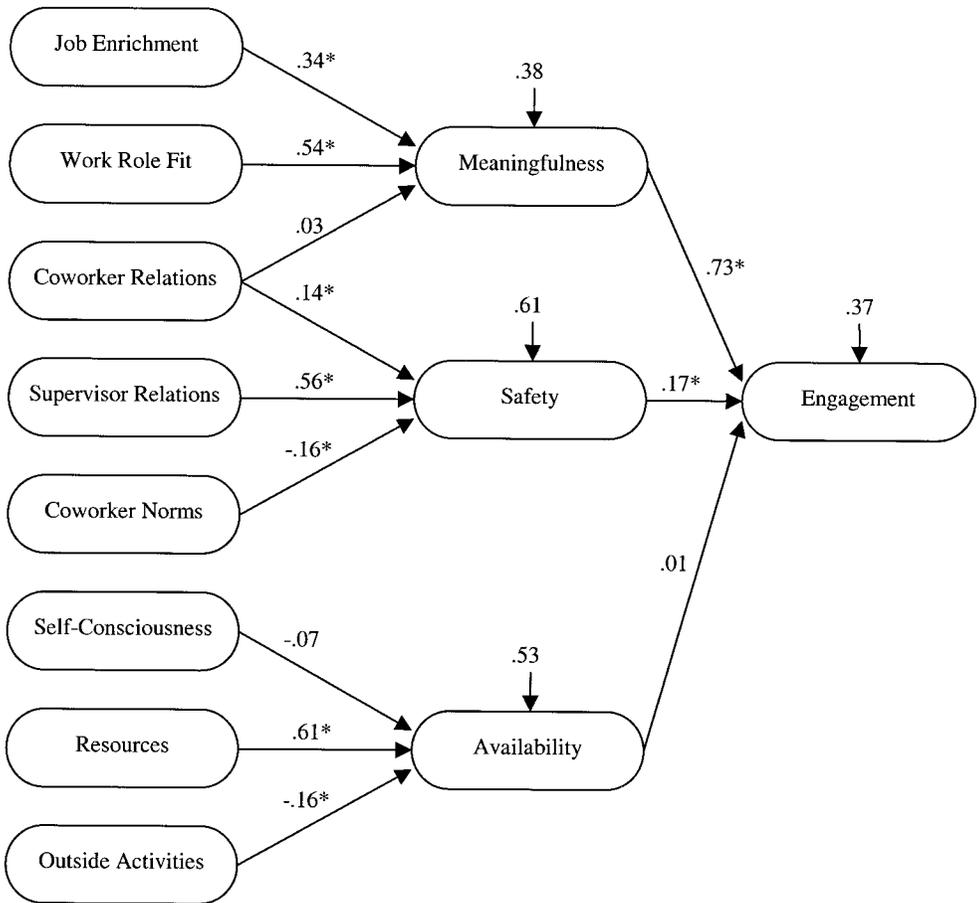*Note.* N=199 because of listwise deletion of missing data.
*p<.05.

Figure 1. Initial path-analytic framework of engagement. *Note.* Path coefficients are standardized. *p<.05.

test for mediation using a path analytic technique used and described by Mayer and Davis (1999). To meet the conditions for mediation enumerated by Baron and Kenny (1986), we analysed three different models using the LISREL-8.51 program. The first model, which we refer to as the 'direct effects' model, estimated direct paths from each independent variables to its hypothesized mediator and to engagement. The second model, which we refer to as the 'indirect effects' model, estimated paths from each independent variable to its hypothesized mediator and from each mediator to engagement. This 'indirect effects' model is equivalent to our *hypothesized* model. The third model, which we refer to as the 'saturated' model, estimated paths from each independent variable to its proposed mediator and engagement and from each mediator to engagement.

We used path analysis to examine the fit of these models to our data. Because the indirect effects model and the direct effects model are both hierarchically nested within the saturated model, differences in fit can be determined using the χ^2 difference test described by Kline (1998). The results of this test in addition to other fit indices are shown in Table 2.

Table 2. Initial framework fit indices and standardized path coefficients

Measures	Direct Model	Indirect (Initial) Model	Saturated Model
Fit Indices			
Chi-squared	99.79*	107.59*	59.66*
df	21	26	18
GFI	.92	.92	.95
NNFI	.65	.71	.76
SRMR	.07	.07	.07
Direct Effects on Engagement			
Job Enrichment	.31*	—	.09
Work Role Fit	.47*	—	.14
Co-worker Relations	.00	—	−.01
Supervisor Relations	.15	—	.14
Co-worker Norms	−.17*	—	−.15*
Resources	−.05	—	−.23*
Self-consciousness	.18*	—	.23*
Outside Activities	−.10	—	−.10
Meaningfulness	—	.73*	.56*
Safety	—	.17*	.06
Availability	—	.01	.22*
Direct Effects on Meaningfulness			
Job Enrichment	.35*	.34*	.34*
Work Role Fit	.53*	.54*	.53*
Co-worker Relations	.04	.03	.04
Direct Effects on Safety			
Co-worker Relations	.14*	.14*	.14*
Supervisor Relations	.56*	.56*	.56*
Co-worker Norms	−.16*	−.16*	−.16*
Direct Effects on Availability			
Resources	.61*	.61*	.61*
Self-consciousness	−.07	−.07	−.07
Outside Activities	−.16*	−.16*	−.16*

*$p<.05$.

The significant χ^2 difference tests indicate that the partial mediation model (i.e. saturated model) had better overall fit to the data than either the hypothesized full mediation model (i.e. indirect effects model) (χ^2 difference=47.93, df=8, $p<.05$) and the direct effects model (χ^2 difference=40.13, df=3, $p<.05$). This suggests that mediation as conceived in the original theoretical framework does not explain the covariation in the data as well as a model allowing partial mediation (i.e. the saturated model).

To determine whether any relationships in the hypothesized full mediation model (i.e. indirect effects model) were indeed fully mediated by the psychological conditions, we evaluated the standardized path coefficients shown in Table 2. We used the

LISREL procedures described by Mayer and Davis (1999) to determine whether the conditions for mediation enumerated by Baron and Kenny (1986) would be met. First, the independent variable (IV) must significantly covary with the presumed mediator. This first condition is met when the path coefficient between an IV and its mediator is significant in the direct effects model. Table 2 shows that in the direct model, all relevant paths *except* the path between co-worker relations and meaningfulness and the path between self-consciousness and availability are significant.

Second, the mediator must significantly covary with the dependent variable (DV). This second condition is met when the path coefficient between the mediator and the DV is significant in the indirect (initial) effects model. Table 2 shows that psychological meaningfulness and psychological safety are significantly related to the DV (engagement) and that psychological availability is not.

Third, when the relationships between the mediator and the IV and DV are controlled, the relationship between the IV and DV becomes non-significant for fully mediated relations. If the relation is still significant, but reduced in magnitude, partial mediation is indicated (Baron & Kenny, 1986). To determine what form of mediation might be present we compared the path coefficients in the direct effects and saturated models.

Table 2 shows that the relationship between job enrichment and engagement is fully mediated by meaningfulness. For instance, in the direct effects model the relationship between job enrichment and engagement (.31) is significant and in the saturated model the relationship (.09) is not significant. Similarly, applying this third condition to the relationship between work role fit and engagement indicates that the relationship is fully mediated by meaningfulness. Finally, the relationship between co-worker norms and engagement is only partially mediated by psychological safety. No other instances of mediation are apparent from the analyses, suggesting that mediation by the three psychological conditions (Hypotheses 5a–c) as originally proposed in Kahn's (1990) framework is only partially supported by the data.

Development of the revised model

Given that the saturated model fit our data better than the originally theorized model, we decided to examine whether a revised model based on the original framework could improve its explanatory power and overall fit with the data. We were primarily concerned with the theoretical issue of mediation and were therefore interested in model revision that would provide a clearer understanding of mediation by the three psychological conditions. The model revision process is discussed below.

First, we deleted the paths between co-worker relations and meaningfulness and between self-consciousness and availability because neither path coefficient was significant. The non-significant chi-squared difference tests after these path deletions indicated that removal of these paths did not significantly impact the model's degree of overall fit (χ^2 *difference* = .40, *df* = 1, *p* > .05 for deletion of co-worker relations and χ^2 *difference* = .56, *df* = 1, *p* > .05 for deletion of self-consciousness). We added new paths one at a time in order to assess each addition's individual impact on other path coefficients and on fit statistics. Significant χ^2 difference tests after each addition indicated that each added path significantly added to the model's degree of overall fit. First, we added the path from self-consciousness to safety (χ^2 *difference* = 11.9, *df* = 1, *p* < .05) because we theorized that individuals who are insecure about their work roles may also not feel safe at work, particularly for those who experience public
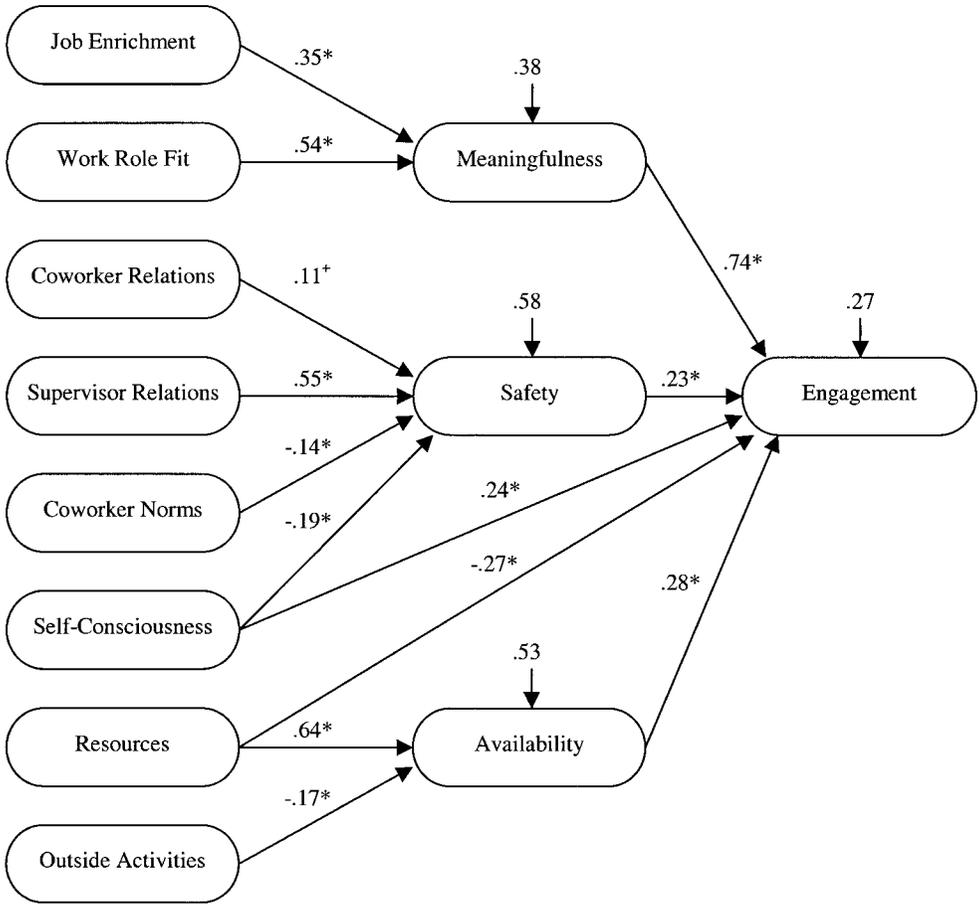
Figure 2. Revised path-analytic framework of engagement. *Note.* Path coefficients are standardized. *p<.05; +p<.10.

self-consciousness (Fenigstein *et al.*, 1975). Kahn (1990) had overlooked this linkage in his original theorizing. Second, we sought to better understand the relation between the determinants of availability and engagement itself. We theorized that there may have direct effects on engagement that were not mediated by availability. Thus, we added paths from self-consciousness to engagement (χ^2 *difference*=17.27, *df*=1, *p*>.05) and from resources to engagement (χ^2 *difference*=9.77, *df*=1, *p*>.05). The revised model is shown in Figure 2.

One important finding in the revised model is that when the direct path between resources and engagement is added to the framework, the relationship between psychological availability and psychological engagement became significant (β=.28, *p*<.05), whereas in the original model it was not significant (β=.01, *ns*). Thus, it appears that the resources variable acts as a suppressor variable in the revised model because: (i) it has a small correlation with the criterion (engagement); (ii) is correlated with the other predictor (availability); and (iii) its inclusion in the model serves to suppress, or control for, irrelevant variance that is shared with the predictor (availability), but not with the criterion (engagement) (Pedhazur, 1982). Inclusion of a

suppressor variable (resources) tends to make the other independent variable (availability) a better predictor of the dependent variable (engagement) (Maassen & Bakker, 2001), but makes the interpretation of the results more difficult. This occurs because the suppressor variable itself (resources) often has a path coefficient with a sign opposite to the sign of its zero-order correlation with the dependent variable (engagement) (Maassen & Bakker, 2001). Researchers argue that it is therefore important to interpret the 'effects' of the suppressor variable and the suppressed variable in conjunction with each other rather than separately (Kline, 1998). In our case, we can therefore state that when holding resources constant, the more psychologically available individuals are, the more likely they are to engage in their work. Alternatively, when holding psychological availability constant, the fewer resources individuals have at the end of the day, the more likely they are to be engaged in their work.

Evaluating revised model fit

To assess the fit of our revised model with the data, we followed procedures recommended by Kline (1998). These procedures allowed us to assess the fit for the overall model and for each portion of the model. To assess overall model fit, we examined several goodness-of-fit indices. To assess whether our revised model was statistically different from the just-identified model (the model having paths from each antecedent to each presumed mediator and to engagement as well as paths from each presumed mediator to engagement), we used the chi-squared test. Significant values of the chi-squared statistic indicated that our over-identified model (the revised model) was significantly different from the just-identified model ($\chi^2=69.61$, $df=25$, $N=199$, $p<.05$).

The LISREL goodness-of-fit index (GFI) and the standardized root mean squared residual (SRMR) all suggested a better fit to the data than did the chi-squared test (GFI=.95; SRMR=.06). Values of GFI $\geq.9$ and values of SRMR $<.10$ are generally considered desirable (Kline, 1998). The Non-Normed Fit Index (NNFI=.82) suggested less than optimal fit for the model because NNFI values $\geq.9$ are desirable. An additional fit index, the chi-squared/degrees of freedom ratio (Kline, 1998), indicated better model fit than the chi-squared test because the value of the ratio is <3.0 ($\chi^2/df=2.78$).

To assess fit for the individual portions of the model, we compared the observed correlations with the correlations reproduced by LISREL-8.51. The examination of these correlation residuals allowed us to examine the degree to which the different portions of the revised model accounted for the original correlations (Kline, 1998). The pattern of correlation residuals indicated relatively good fit for the portions of the model predicting meaningfulness, safety, and availability. The correlation residuals for the portion of the model predicting engagement indicated fair fit for that portion of the model.

Taken together, the model fit indices and the correlation residuals suggest that the relationships posited in the revised model account for a substantial amount of the covariation in the data. In addition, the revised model accounts for a large proportion of the variance in the three mediators and in engagement, lending more empirical support for the revised model's adequacy.

Discussion

The findings of this study contribute to our understanding of the psychological conditions that relate to individuals' engagement at work. The results associated with the

investigation of the original theoretical model suggest that psychological meaningfulness and safety were positively linked to employees' investment in their work roles. Job enrichment and work role fit were positively associated with psychological meaningfulness. Supportive supervisor and rewarding co-worker relations had positive relations with feelings of psychological safety, and adherence to co-worker norms was negatively related. Availability was positively related to resources and negatively related to participation in outside activities. Mediation analyses demonstrated that meaningfulness fully mediated the effects of both job enrichment and work role fit on engagement. The relationship between co-worker norms and engagement was only partially mediated by psychological safety. Revisions to the original framework suggest that all three psychological conditions are important in determining one's engagement at work. In addition to the relations described above, self-consciousness was related to perceptions of psychological safety and self-consciousness and resources had direct relations with engagement.

Integration with previous theory and research

The significant relation between job enrichment and psychological meaningfulness reinforces previous research on job design (May, 2003; Johns *et al.*, 1992; Renn & Vandenberg, 1995). The relation between work role fit and meaningfulness is consistent with previous research (May, 2003) and with the view that when people see their roles as opportunities to express themselves they will experience a sense of meaning (Brief & Nord, 1990; Shamir, 1991). The lack of a relation between rewarding co-worker relations and psychological meaningfulness suggests that the individuals doing jobs relating to claims processing in the insurance company may not gain a strong sense of social identity from their co-workers or that they lack sufficient opportunity to interact with co-workers to satisfy basic relatedness needs at work (Locke & Taylor, 1990). Future research should study the effect of co-worker relations on meaningfulness in other types of jobs and contexts in order to understand the reasons for the inconsistent findings of this research with prior qualitative and quantitative research (May, 2003; Isaksen, 1995; Kahn, 1990).

While meaningfulness had the strongest effect on engagement, psychological safety also played a significant role. All three of the original hypothesized determinants of safety had significant influences, with supervisor relations demonstrating the strongest effect. These findings confirm previous research, which has discussed the positive effects of supportive managerial behaviour on creativity, task performance and psychological safety (e.g. Deci *et al.*, 1989; Edmondson, 1999; Oldham & Cummings, 1996) and suggest that these theoretical relations are generalizable across many contexts. In addition, these findings are consistent with the growing literature on trust in organizations. 'Trustworthy' managerial behaviours discussed by Whitener *et al.* (1998) are strikingly similar to the supportive supervisory behaviours outlined in the creativity literature. Future research should investigate more fully the relations between the specific dimensions of trustworthy behaviours outlined by Whitener *et al.* (1998) and employees' level of engagement in their roles. Perhaps some dimensions, such as 'sharing of control', are more important for determining engagement than other dimensions of trust.

Consistent with our expectations, individuals who reported adhering to co-worker norms experienced *less* psychological safety at work. Perhaps employees who consciously feel they *must* comply with normative behaviours set by their co-workers do

not feel as if they can truly be themselves at work and experience the negative aspects of concertive control systems in teams (Barker, 1993). The jobs in our insurance company sample were primarily sequentially interdependent and constrained in nature as they involved claims processing and support. Future research might investigate if the strength, or mere existence, of the workplace norms influences employees' perceptions of psychological safety and if norms have less influence in more loosely coupled settings than the one observed here. Edmondson (1999) discusses how the relation between psychological safety and learning may vary by the relative constraints on the type of team task. Similarly, the psychological safety–employee engagement relation may be stronger for more complex, uncertain, creative tasks than those that are relatively simple and well defined.

Our revised framework also suggests that feelings of self-consciousness significantly influenced employees' psychological safety. Those individuals who constantly worry about what others think of them are likely to experience less psychological safety at work. They will be inhibited when it comes to trying new ways of accomplishing their tasks. Impression management tactics (Schlenker, 1980) may reflect a heightened sense of self-consciousness in such employees. Managers may wish to create a particularly supportive environment for self-conscious individuals. Future research should examine the influence of self-consciousness on feelings of safety in other jobs and organizations. Self-consciousness may have its strongest effect on psychological safety in jobs that require much interaction, such as in teams or in customer service.

Finally, the third psychological condition, availability, did not exhibit a significant relation with engagement at work in our examination of the original theoretical model even though Kahn (1990) eloquently argued for such an effect. Yet, this relation did emerge when the direct effect of resources on engagement was taken into account in the revised model. As discussed above, resources acted as a suppressor of the availability–engagement relation and future research should examine its effects in models of engagement.

All of the expected determinants of psychological availability displayed significant relations except self-consciousness. The amount of one's cognitive, emotional and physical resources had the strongest effect on psychological availability. Thus, care should be taken by managers to design jobs such that they do not require too much cognitive, emotional or physical labour. Excessive amounts of stress, emotional exhaustion and injuries may prevent individuals from being available for their roles. Employees should also be encouraged to invest in themselves in order to create new resources (e.g. new skills) and, thus, heightened perceptions of availability. Contrary to expectations, self-consciousness did not influence availability perceptions. Perhaps only when insecurities about others' perceptions reach inordinately high levels might self-consciousness distractions impact availability. Future research may wish to examine this possibility and the influence of personality variables associated with interpersonal neuroticism on perceptions of availability and engagement at work. Future research should explore other dimensions of work role security that may influence availability, such as feelings of competence in one's work role and fit with the organization. Although the research here explored the relation between participation in outside organizations and availability, research should also examine the complex relations between family demands and individuals' availability to engage themselves in their work. Rothbard (2001) recently demonstrated that these relations differ by gender with women exhibiting more linkages. Intriguingly, she found that there is an enriching effect (vs. depletion effect) of family to work engagement for women.

Overall, rigorous analyses of the theoretical framework demonstrated that psychological meaningfulness fully mediated both the effects of job enrichment and work role fit on engagement. Results indicated that we explained 73% of the variance in engagement with the revised framework, once measurement error was taken into account. The variance explained in psychological meaningfulness (62%) was more than that explained in either psychological safety (42%) or availability (47%). Given this and that meaningfulness had the strongest relation to engagement, future research should continue to explore the determinants of psychological meaningfulness and its relation to different employee outcomes, for it may be the 'encompassing' psychological state that Renn and Vandenberg (1995) suggested it was.

Research may also wish to consider how the psychological conditions studied here operate within multiple role contexts. The jobs here primarily involved relatively narrow roles associated with claims processing. Roles may vary in their degree of meaningfulness, safety and availability for individuals. Exploring the relations between these psychological conditions and engagement for individuals who occupy multiple roles might give managers better information on the leverage points for employee engagement in their roles. Finally, research should investigate whether individuals who have more autonomy to craft their own roles are more engaged than those who are assigned roles by organizations.

Strengths and limitations

This study has several important strengths as well as limitations. The first strength is that the study was well grounded in the theory of psychological engagement. This strong theoretical underpinning for our hypotheses drove the path analytical portion of our study and provided support for our inferences about the relationships among the constructs. A second strength is that the path analysis itself was relatively rigorous. Whenever possible, we followed the recommendations of Kline (1998) in preparing our data for analysis. For example, we ensured that our data did not significantly deviate from univariate and multivariate normal distributions. We also took into account measurement error in our path analyses. We also tested the mediation hypotheses (H5a–c) rigorously by comparing different path models (i.e. direct effects, indirect effects and saturated models) (Baron & Kenny, 1986; Mayer & Davis, 1999).

One limitation of the study is that the data came from a cross-sectional field study that used a self-report survey instrument. Owing to the research design, causal inferences cannot be made, but our hypothesized relationships are consistent with previous theory and research (cf. Kahn, 1990). Results of the principal components factor analyses discussed earlier also reduce the plausibility of common method variance as an alternative explanation for our findings.

Finally, the study sample was limited to administrative employees and management within a single large group of an insurance firm and the sample was made up of primarily female employees. Future research should also examine the generalizability of these results to men given that sex differences have been found in previous research on engagement (Rothbard, 2001). Research is also needed to explore whether the relations we found in the study generalize to other organizational settings as the determinants of the psychological conditions may vary in their importance in the model. For example, co-worker relations may be more important in interdependent work settings, while supervisor relations may play an important role in hierarchical organizations.

Implications for management

The findings of this study have important implications for managers in terms of the design of jobs, employee selection and relations with employees. First, psychological meaningfulness has been linked to many important attitudinal outcomes in addition to engagement (e.g. job satisfaction, internal work motivation and turnover cognitions) and behavioural outcomes (e.g. performance and absenteeism) (May, 2003). Thus, managers should attempt to foster meaningfulness through the effective design of jobs. Second, the findings of this study also suggest that selecting the proper employees for particular work roles will enhance meaningfulness. Care must be taken to learn more about the personal aspirations and desires of employees in order to fit them to roles that will allow them to better express themselves.

Managers should also work to establish employee perceptions of safety by developing supportive, trustworthy relations with their employees. Specifically, it is important for managers to encourage employees to solve work-related problems, develop new skills, participate in decisions, treat employees fairly, be consistent in their actions, demonstrate integrity between their words and actions, use open communication and demonstrate genuine concern for employees (Oldham & Cummings, 1996; Whitener *et al.*, 1998). Managers should also use organizational selection devices such as a 'realistic job preview' to not only obtain better work role fit, but to also expose future employees to potential co-workers to help improve fit with co-workers and their norms. Care should also be taken to counsel employees high in self-consciousness into appropriate roles or help them receive counselling in order to change their insecurities.

Finally, managers should also be careful to design jobs to minimize the cognitive, emotional and physical strain experienced by employees. As noted above, managers should not overload employees with cognitive processing demands, or require them to perform extensive emotional labour in their positions without breaks, and should minimize the ergonomic job-related hazards present in their jobs. Additionally, managers should encourage employees to invest in the development of their own skills and resources in order to improve perceptions of psychological availability. Finally, employees must balance participation in outside organizations with the need to make themselves available for their jobs.

Acknowledgements

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Appendix

Scale items

Engagement

Cognitive

Performing my job is so absorbing that I forget about everything else.

I often think about other things when performing my job. (r)

I am rarely distracted when performing my job.

Time passes quickly when I perform my job.

Emotional

I really put my heart into my job.

I get excited when I perform well on my job.

I often feel emotionally detached from my job. (r)

My own feelings are affected by how well I perform my job.

Physical

I exert a lot of energy performing my job.

I stay until the job is done.

I avoid working overtime whenever possible. (r)

I take work home to do.

I avoid working too hard. (r)

Meaningfulness

The work I do on this job is very important to me.

My job activities are personally meaningful to me.

The work I do on this job is worthwhile.

My job activities are significant to me.

The work I do on this job is meaningful to me.

I feel that the work I do on my job is valuable.

Psychological safety

I'm not afraid to be myself at work.

I am afraid to express my opinions at work. (r)

There is a threatening environment at work. (r)

Psychological availability

I am confident in my ability to handle competing demands at work.

I am confident in my ability to deal with problems that come up at work.

I am confident in my ability to think clearly at work.

I am confident in my ability to display the appropriate emotions at work.

I am confident that I can handle the physical demands at work.

Job enrichment

Skill variety, task identity, task significance, autonomy, and feedback from the job itself were all measured using three item each from the Job Diagnostic Survey (Hackman & Oldham, 1980).

Work role fit

My job 'fits' how I see myself.

I like the identity my job gives me.

The work I do on this job helps me satisfy who I am.

My job 'fits' how I see myself in the future.

Rewarding co-worker relations

My interactions with my co-workers are rewarding.

My co-workers value my input.

My co-workers listen to what I have to say.

My co-workers really know who I am.

I believe that my co-workers appreciate who I am.

I sense a real connection with my co-workers.

My co-workers and I have mutual respect for one another.

I feel a real 'kinship' with my co-workers.

I feel worthwhile when I am around my co-workers.

I trust my co-workers.

Supportive supervisor relations

My supervisor helps me solve work-related problems.

My supervisor encourages me to develop new skills.

My supervisor keeps informed about how employees think and feel about things.

My supervisor encourages employees to participate in important decisions.

My supervisor praises good work.

My supervisor encourages employees to speak up when they disagree with a decision.

Employees are treated fairly by my supervisor.

My supervisor is committed to protecting my interests.

My supervisor does what he/she says he/she will do.

I trust my supervisor.

Co-worker norm adherence

I go along with the norms in my group of co-workers.

I don't 'rock the boat' with my co-workers.

I do what is expected of me by my co-workers.

Resources

I feel mentally sharp at the end of the workday.

I can't think straight by the end of my workday. (r)

I feel overwhelmed by the things going on at work. (r)

I feel emotionally healthy at the end of the workday.

I feel like I'm at the end of my rope emotionally. (r)

I feel emotionally drained from my work. (r)

I feel tired before my workday is over. (r)

I feel physically used up at the end of the workday. (r)

Self-consciousness

I worry about how others perceive me at work.

I am afraid my failings will be noticed by others.

I don't worry about being judged by others at work. (r)