'Flow' at work: An experience sampling approach

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One of the core constructs of the positive psychology movement is that of 'flow', or optimal experience. The current study investigated the relationship between 'flow', the core job dimensions, and subjective well-being (SWB), as well as distinguishing between the state and trait components of flow. Experience sampling methodology (ESM) was used to track 40 architectural students over a 15 week semester while they engaged in studio work. Hierarchical linear modelling (HLM) indicated that 74\% of the variance in flow was attributable to situational characteristics compared to dispositional factors. Results also indicated that academic work that was high in skill variety and autonomy was associated with flow. Flow was found to be correlated with positive mood. Cross-lagged regression analysis showed that momentary flow was predictive of momentary mood and not vice versa. The strengths and limitations of using ESM to study subjective work experiences and well-being are discussed, as well as the implications of the study of flow or optimal experience for industrial/organizational psychology.

A repercussion of Martin Seligman's (1999) call for a 'positive psychology' can be witnessed in the upswing in organizational research that emphasizes optimal experience, transcendent performance, excellence, and positive deviance (Cameron, Dutton, & Quinn, 2003; Luthans, 2001). One concept that would seem to be particularly appropriate to positive organizational scholarship is that of 'flow'. 'Flow' was a term first coined by Csikszentmihalyi (1975) who defined it as the 'holistic sensation that people feel when they act with total involvement (p. 4)' . Flow has been defined as the experience of working at full capacity, with intense engagement and effortless action, where personal skills match required challenges (Nakamura & Csikszentmihalyi, 2002). It is regarded as an 'optimal experience' to such an extent that the two terms are often used interchangeably.

Originally Csikszentmihalyi studied flow among painters, rock climbers, dancers, and musicians. Most research has focused on the experience of flow in voluntary and pleasurable leisure and sporting activities. However, the experience of flow has also been frequently reported while engaging in work-related tasks as opposed to leisure activities (Csikszentmihalyi & LeFevre, 1989; Fave & Massimini, 1988). This is not
surprising given that many of the precursors of flow (such as immediate feedback, commensurate challenges and skills, and clear goals) are more likely to be found in work activities. Despite the fact that flow experiences have been reported in work, relatively little research has studied flow in the work context. The current research is a longitudinal investigation of some of the antecedents and outcomes of flow while engaging in work activities.

**Operationalizations of flow**

A remarkable consistency has been found in the description of flow across diverse settings (Csikszentmihalyi, 1975). The dominant characteristic of early models of flow was the emphasis on the balance between challenges and skills (Csikszentmihalyi, 1975). However, qualitative and quantitative research has identified several key elements inherent in the experience of flow (Csikszentmihalyi, 1990, 1993; Jackson, 1996; Jackson & Marsh, 1996). Specifically, flow has been characterized as consisting of nine component states (Csikszentmihalyi, 1990, 1993). The first is a challenge-skill balance and it refers to the match that must be present between the skills required to perform the task and challenges of the situation. If the challenges in the activity exceed the individual's skill level then frustration rather than flow occurs. If the activity does not challenge the individual's skills then the result is boredom. If both challenges and skills are balanced but do not exceed a specific level of difficulty and complexity then apathy is likely to occur. Flow only occurs when the balance between challenges and skills exceeds a level that is typical for daily experiences. Second, there is a merging of action and awareness. One's involvement in the task is such that behavior becomes automatic and spontaneous and there is little awareness of the self other than what one is doing. Third, there is a strong sense of what has to be done and clarity of goals. Fourth, the activity itself provides clear, immediate and unambiguous feedback concerning progress towards one's goals. Fifth, there is an extremely high degree of involvement with, focus on, and concentration on the task at hand. Attention and energies are exquisitely focused on the task and there is an absence of distraction. Sixth, there is a sense of exercising control without having to try and be in control that is termed the paradox of control. People in flow report they feel in control but as soon as their attention shifts to trying to maintain control they lose the sense of flow. Seventh, there is a loss of self-consciousness as all concern for self disappears and the person becomes one with the activity. Eighth, there is a transformation of time that seems to occur in which there is loss of time awareness. Finally, the ninth dimension of flow is the autotelic experience. Csikszentmihalyi (1990) coined the term autotelic experience from the two Greek words auto, meaning self, and telos meaning goal. Such optimal experiences are an end in themselves and are so enjoyable that they become intrinsically motivating. Flow is described as such an enjoyable experience that one is motivated to return to this state.

Considered together these nine dimensions of flow provide a comprehensive measure of optimal experience (Jackson & Ecklund, 2004). In the most recent research on flow in the workplace flow has been measured as either a global construct (e.g. Demerouti, 2006) or the challenge/skill dimension of flow has been focused on (e.g. Eisenberger, Jones, Stinglhamber, Shanock, & Randall, 2005). Such unidimensional approaches have been found to be psychometrically acceptable (Jackson & Ecklund, 2002; Jackson & Marsh, 1996; Marsh & Jackson, 1999). Indeed, the nine subscales of flow have been found to be highly correlated and there appears to be a substantial proportion of shared variance (Jackson & Ecklund, 2004).
Flow: State or trait
Theodore Mischel (1969) has stated that 'clarification of key concepts must be part of the business of theory construction in psychology' (p. 264). An important piece of this clarification process is distinguishing whether a construct is a trait or a state (Allen & Potkay, 1981). A trait construct is a behaviour that individuals perform regularly - it is a reliably permanent internal disposition. A state construct, on the other hand, is more ephemeral and is a behaviour that is performed occasionally in response to situational contingencies (Allport & Odbert, 1936).

There is some debate as to whether flow is a state or a trait. Flow as a state is defined as a psychological state of mind that is transitory, existing at a given moment in time and at a particular level of intensity, and experienced while performing a specific activity. However, Csikszentmihalyi (1990) has also referred to the 'autotelic personality' in that certain individuals may have psychological characteristics that make them more prone to the experience of flow regardless of the situation. Allen and Potkay (1981) have pointed out that the distinction between trait and state constructs is frequently and arbitrarily made by varying the instructions on scales that contain the same items. When a state construct is being assessed participants are asked to rate their state of mind 'today' or 'now'. When traits are measured, subjects are required to rate their state of mind 'in general'. This arbitrary distinction can be found in operationalizations of flow (Jackson & Ecklund, 2004). Dispositional assessments of the flow experience (e.g. the dispositional flow scale, Jackson & Ecklund, 2004) measure the general tendency to experience flow during an activity usually selected by the participant. Respondents are required to recall and rate the frequency with which he/she experience the various characteristics of flow (Jackson & Ecklund, 2004). The premise behind this approach is that individuals who report higher frequencies of flow characteristics have a greater predisposition to experience flow. State measures of flow (e.g. the flow state scale (FSS), Jackson & Ecklund, 2004) are usually administered immediately following an activity, and assess the level of flow characteristics during the activity. By surveying participants close to the conclusion of an activity it is assumed that a more accurate assessment of the flow experience is assessed, one that is less susceptible to recall bias. As Allen and Potkay (1981) note, changing the instructions presumes that there is a change in the respondent's orientation from state to trait. Using such minor changes in the wording of survey instructions to differentiate between state and trait constructs is an arbitrary and tenuous distinction.

There are other, more valid ways of distinguishing between state and trait constructs. Zuckerman (1983) has suggested that state and trait variables behave in very different ways. First, trait variables should be expected to exhibit low variation from situation to situation. That is they should have high test–retest reliability and should not change much with transient changes in situational conditions. State variables, on the other hand, should vary considerably as situational contingencies and characteristics change (i.e. they should have low test–retest reliability). Second, trait variables should correlate more highly with other trait measures and state measures should be more strongly associated with situational, or moment-to-moment variables. To date no research has been undertaken that sifts out the trait versus state components of flow. This is an important distinction, not only from the perspective of conceptual clarification, but also in terms of the practical and theoretical implications of the study of flow.

As we point out above, recent operationalizations of flow (Jackson & Ecklund, 2002, 2004) have defined it as both a state and a trait construct. Flow is described as a psychological state influenced by state-based factors with individuals varying in their
propensity to regularly experience flow (Jackson, Kimiecik, Ford, & Marsh, 1998). Most research that has investigated both the trait and state aspects of flow has proposed that the relationship between situational characteristics and state-based flow is moderated by dispositional elements. For example, Kimiecik and Stein (1992) have suggested that for athletes the relationship between experience of flow and engaging in sporting activities is contingent upon whether the athletes have a task- or ego-involved goal orientation. More recently, two studies that have investigated flow at work found that the relationship between flow (challenge-skill balance) and mood, task interest and performance was moderated by need for achievement (Eisenberger et al., 2005), and that the relationship between flow and in-role and extra-role performance was dependent on conscientiousness (Demerouti, 2006).

Although personality characteristics such as achievement motivation, aestheticism, and inquisitiveness have been associated with flow (Csikszentmihalyi, Rathunde, & Whalen, 1993; Jackson, 1984) no research has been conducted that sifts out the trait versus state components of optimal experience. The first aim of the current study was to track flow over an extended period of time in order to assess the extent to which it varied from task to task and across individuals. If flow is a dispositional construct, then one would expect variation between the individual's predisposition to experience flow, and little moment-to-moment variance. On the other hand, if there is a large state-related component in flow, then one should expect to find considerable variation in momentary flow.

**Hypothesis I:** Ratings of flow will exhibit both within-individual variance (state) and between-individual (trait) variance with the former accounting for most of the variance in ratings.

**Task characteristics and flow**

There has been a considerable amount of research that has investigated the links between specific aspects of a person's job and his/her well-being (see Warr, 1999, for a summary). One framework that has been particularly influential in understanding this relationship is the job characteristics model (Hackman & Oldham, 1980; Oldham, 1996). Turner, Barling, and Zacharatos (2002) have argued the utility of this model in understanding the concept of 'healthy' work and in promoting psychological and physical well-being.

The JCM outlines five core job characteristics that influence workers' attitudes and behaviour (Hackman & Oldham, 1975, 1980). **Skill variety** refers to the degree to which the job requires different activities and skills to carry out the task. **Task identity** is the extent to which the job requires completion of a whole and identifiable piece of work. **Task significance** indicates the degree to which the job has a meaningful impact on other people. **Autonomy** refers to the extent to which the worker has independent discretion in determining the schedule and process of work. Finally, **feedback** is the extent to which the worker is provided with information concerning how well he/she is performing. These five core job characteristics are proposed to impact on critical psychological states that then influence affective and motivational outcomes.

Although the majority of research has supported the validity of the JCM (Fried & Ferris, 1987; Taber & Taylor, 1990), most studies have not tested the full, three-stage model (Bebson, Eddy, & Lorenzet, 2000). Specifically, the mediating effects of the critical psychological states have been neglected, with the preponderance of research assessing the direct impact of the core job characteristics on a variety of outcomes...
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(Behson et al., 2000; Johns, Xie, & Fang, 1992). Recently there has been some meta-analytical evidence to suggest that the critical psychological states in the JCM do explain some additional variance in the outcome measures (Behson et al., 2000). One consistent conclusion regarding research on the JCM is that more research attention needs to take into account psychological states in the development of an understanding of the impact of work on employees (Johns et al., 1992; Renn & Vandenbarg, 1995).

The aim of the present research was not to validate the JCM but to use it as a nomological framework to establish the validity of flow as a critical psychological state that mediates the relationship between certain core job characteristics and well-being among individuals who are engaged in work activities. Recently, Demerouti (2006) found that motivating job characteristics are indeed positively related to flow at work. However, Demerouti did not ascertain the differential effects of each of the five core job dimensions on flow. Following Fried and Ferris' (1987) guidelines she calculated a single, unweighted additive index that assessed the motivating potential score of the job. We believe that certain core job characteristics have stronger conceptual links to flow and that others will be weakly related or unrelated to optimal experience.

For example, the utilization of a variety of skills to meet the challenges of work has consistently been found to be associated with job satisfaction and motivation (Gavin & Axelrod, 1977; O’Brien, 1983). Csikszentmihalyi's flow theory also holds that an optimal balance between challenges and skills inherent in a task is crucial for the intrinsically motivating and satisfying subjective state that he termed flow (Csikszentmihalyi, 1990). Those tasks that require the utilization of many skills and abilities will be the most intrinsically rewarding and conducive of flow (Csikszentmihalyi & Rathunde, 1992). Consequently, one would expect a strong association between the core job characteristic of skill variety and the experience of flow.

Not only is it important that the task be challenging to facilitate flow, but there must also be clear goals so that the performer can remain fully engaged in the task. Feedback becomes the mechanism that enables individuals to clarify their progress towards these goals (Jackson & Ecklund, 2004). Csikszentmihalyi (1997) states that immediate feedback is a necessary component to experience flow. Feedback is also an important core dimension outlined by the job characteristics model. However, unlike the flow experience where feedback is intrinsic to the task itself, Hackman and Oldham (1975) emphasize feedback from extrinsic sources such as supervisors, co-workers and clients. Nonetheless, one would expect the two forms of feedback to be related and that feedback from outside sources should be related to the overall experience of flow.

Autonomy and a sense of control also have been argued to be central elements of both flow (Csikszentmihalyi, 1997) and the core job dimensions (Hackman & Oldham, 1975). There is also some empirical evidence indicating that autonomy is an antecedent of flow experiences (Bakker, 2005, 2008). More recently a meta-analysis of locus of control at work (Ng, Sorensen, & Eby, 2006) found internal locus of control to be significantly associated with positive task characteristics and motivation. Consequently one would expect high levels of autonomy to be positively correlated with flow.

However, task significance and task identity refer to broader perspectives of work concerning whether a job has a substantial impact on the lives of other people and the extent to which the job entails an entire product. Flow has been associated with individual engagement in specific, isolated, activities that do not necessarily have an impact on any one else beyond the individual performing the task or consist of a meaningful whole. Consequently one would not expect these job characteristics to be associated with optimal experience.
Hypothesis 2: The experience of flow will be positively related to (a) skill variety, (b) feedback, and (c) autonomy.

Flow and well-being

One of the repercussions of positive psychology has been an upswing in interest in well-being. A distinction has been made between hedonic and eudaimonic well-being (Ryan & Deci, 2001; Waterman, 1993). Hedonic approaches are pleasure-based and define well-being in terms of the presence of pleasure and the absence of pain. Well-being frequently is assessed by measuring momentary positive affect or mood (e.g. Diener, Suh, Lucas, & Smith, 1999; Kahneman, Diener, & Schwarz, 1999). Eudaimonic approaches, on the other hand, emphasize optimal functioning and personal expressiveness (Waterman, 1993). For example, Ryff has defined psychological well-being from a eudaimonic perspective and as consisting of six dimensions: autonomy; personal growth; self-acceptance; life purpose; mastery; and positive relatedness (Ryff, 1989, 1995; Ryff & Keyes, 1995). Flow could also be regarded as a momentary form of eudaimonic well-being. It consists of many of the same aspects of psychological well-being; a sense of control and mastery over the task, a clarity of purpose, a belief that one possesses the skills to perform well, engagement in and relatedness to the task, and a sense of enjoyment (Csikszentmihalyi & Csikszentmihalyi, 1988). There is evidence to suggest that well-being is best conceptualized as a multidimensional construct that includes both hedonic and eudaimonic aspects (King & Napa, 1998; McGregor & Little, 1998; Ryan & Deci, 2001). However, emotional positivity is regarded as being independent of eudaimonic well-being. Indeed, positive affect has been suggested to be an outcome of eudaimonic processes. There is some longitudinal research that suggests that positive affectivity is an outcome of both eudaimonic functioning (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Ryff & Singer, 1998; Sheldon, Ryan, & Reis, 1996) and flow (Han, 1988; Hull, 1991; Massimini & Carli, 1988) further strengthening the convergent validity argument that eudaimonic well-being and flow are conceptually similar.

Hedonic well-being has been primarily operationalized as subjective well-being (SWB) or happiness (Diener & Lucas, 1999; Kahneman, 1999; Ryan & Deci, 2001). An important component of SWB is the presence of positive mood. The other component is life satisfaction. In the current study we focused on assessing momentary positive affectivity rather than life satisfaction as the latter has been found to be relatively stable across time and to only slightly fluctuate around an individual set-point (Fujita & Diener, 2005). Flow experiences have been found to be associated with such positive moods and emotions as excitement, joy, ecstasy, happiness, and pride (Bloch, 2002) and SWB (Bryce & Haworth, 2002; Clarke & Haworth, 1994; Faye & Massimini, 1988; Seongyeul, 1988). LeFevre (1988) found that the more time people spent in flow the more positive affect they experienced. The little empirical research that has been undertaken on flow in a work context suggests that people who enjoy their jobs often report experiences of flow while at work (Bryce & Haworth, 2002; Csikszentmihalyi, 1990; Csikszentmihalyi & LeFevre, 1989; Haworth & Hill, 1992). More recently flow (specifically high challenge skill balance) has been found to be associated with greater positive mood and higher performance, particularly among high need for achievers (Eisenberger et al., 2005).

However, much of the research that has investigated the relationship between flow and mood is confounded by a methodology that makes for a tautologous rationale for the relationship between flow and well-being. Csikszentmihalyi (1975) initially asked
subjects to describe highly enjoyable experiences or activities in order to define the characteristics of flow. Also there has been some research to suggest that the relationship between flow and well-being may not be as strong as originally proposed. Clarke and Haworth (1994) found that college students perceived work where skills exceeded challenges to be more enjoyable than flow activities where skills matched challenges. Csikszentmihalyi (1997) has commented on the paradoxical nature of flow in that although individuals report positive experiences with flow at work, they may not necessarily feel happy at work. The current research surveyed a wide variety of work activities (not just enjoyable ones) in order to determine the relationship between flow and hedonic well-being.

Finally, although flow has been associated with positive mood, the causal direction of this relationship has yet to be established. All of the research on flow at work and mood has been cross-sectional in nature. In contrast, in the current study we adopt a longitudinal design in order to sift out the lagged effects of momentary flow on momentary mood and vice versa. Consistent with our view of flow as a critical psychological state, we hypothesize that:

**Hypothesis 3:** The experience of flow will be positively related to positive mood.

**The Current Study**

Thus, the current study is an examination of the relationships between flow, task characteristics and hedonic well-being. We propose that flow is primarily a state-like variable (H1), that flow is related to task characteristics (H2), and that the experience of flow is associated with hedonic well-being or mood (H3). To examine these hypotheses we use an experience sampling methodology (ESM) in a sample of architecture students engaged in studio work.

Architectural students were chosen as the focus for our study for two reasons. First, architectural students spend long hours working on creative projects in studio that would tend to indicate that they are engaged in tasks that have a high motivating potential and that are conducive to flow. Second, 5th year students engage in studio projects that are representative of the work that they would do as professional architects, so the ecological validity of the work tasks is high. In our study, all participants were enrolled in a 5th-year studio in architectural design.

Studio sessions focus on the synthesis of basic social, functional, technical, and aesthetic factors in design and students are required to work independently on projects that visually represent design ideas. Being the final studio in the architectural programme, students engage in work highly similar to the activities of their profession. Architectural studio consists of two components: 3 weekly, 4 hour formal sessions, where students collectively meet with their professor to discuss their projects; and more frequent and informal independent sessions where students work on their own on their projects. These latter sessions usually take place at night and continue into the early hours of the morning. Our data collection focused on these sessions in which individuals worked freely on their own architecture projects.

**Methodology**

**Experience Sampling Methodology**

The current study utilized an ESM. ESM is a method of data collection where participants are assessed at repeated moments over the course of time while functioning in their
natural settings. Data were collected by handheld personal digital assistants (PDAs). Participants were required to carry the PDAs for a specific sampling period and to record their behaviours, attitudes, and experiences. The PDAs were configured using a customized software called experience sampling program (ESP; Barrett & Feldman Barrett, 2000).

**Participants and procedure**

Participants in the study consisted of 40, 5th-year architectural students from the school of architecture at a large American university in the Midwest of the United States. At the beginning of the semester four studio classes were solicited for 40 volunteers. Participation in the study was completely voluntary and individuals who fully participated received an honorarium ($50) in return for their participation. The research protocol was reviewed and approved by the university Institutional Review Board. The data were collected across 15 weeks of the Fall semester of 2004. During an initial session participants were asked to provide the researcher with three days and time periods during the coming week when they were most likely to be working independently on their projects in studio. Each student was then given a PDA that was pre-programmed to signal participants at two random moments during the three stipulated weekly studio periods. Students were instructed to complete the work task that they were involved in before completing a short survey on the PDA. Once the initial signal had beeped, the alarm repeated itself every 5 minutes for 15 minutes until the survey had been completed. The average time between the initial signal and the participant's response was 4.7 minutes. Participants were informed that they should only respond when beeped during a work-related activity and that they should respond only once during any single studio session. This process was repeated on a weekly basis until 25 trials had been completed (giving 1,000 data points in total). The average time between measurement periods was 2.3 days.

**Experienced-sampled measures**

Each PDA was programmed with an experience sampling form (ESF) that was designed to elicit a wide range of information on the participant's activities, mood, perceptions of optimal performance, and psychological state of flow. For the research process to be the least disruptive, it was important that each trial should not take longer than two minutes. Each PDA was programmed to beep participants at two random times during every block of diarized studio time, with the restriction that no two signals would be less than 60 minutes apart.

*Flow* was measured using nine items from the FSS-2 (Jackson & Eklund, 2004; Jackson & Marsh, 1996). Although this scale was designed to assess flow experiences within a particular physical activity, it was deemed appropriate for the current research. Like sports activities (the original focus for measurement), studio work occurred during a clearly defined time period with clearly defined activities comprising the 'event'. The scale was theoretically grounded in Csikszentmihalyi's (1990) nine-dimensional operationalization of flow. It would have been too intrusive and disruptive to include all 36 items of FSS-2 scale for each of the 25 trials. Moreover, although designed to

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1 These times did not include the regular formal meeting times of studio which occurred on Mondays, Wednesdays, and Fridays from 1:00 p.m. to 5:00 p.m.
measure nine dimensions of flow, it is common to take an 'overall' flow score as the sum of the dimensional scores for use in further analysis (see e.g. Jackson & Marsh, 1996). Consequently, nine items were chosen on the basis of their loadings on each of the nine dimensions derived in the original construct validation study (Jackson & Eklund, 2004). The flow questions were preceded by the momentary statement, ‘Please answer the following questions in relation to your experience in the work activity that you were engaged in when you were beeped’. Ratings were obtained by tapping with the stylus one of the following options; strongly disagree, disagree, neither agree nor disagree, agree, strongly agree which were scored 1-5 accordingly. Each item had to be responded to for the trial to progress. The order in which the flow items appeared in the survey was randomized across situations in order to reduce response set. A total flow score was computed that consisted of the sum of the scores on the nine flow items. The internal consistency coefficient of the flow scale (computed on within-individual mean item ratings) was satisfactory ($\alpha = .83$).

**Job characteristics model**
Fifteen items from the job diagnostic survey were used to assess participants' perceptions of the task characteristics associated with studio work (Hackman & Oldham, 1975). The job diagnostic survey is theoretically grounded in the job characteristics model and assesses each of the five core task dimensions (skill variety, task identity, task significance, autonomy, and feedback from the job) with six items. Items were reworded to be appropriate for studio work (e.g. ‘How much were you left on your own to do your own work?’; ‘How repetitious was the work in studio?’) The measure was administered at the end of the semester. Internal consistency was satisfactory for all five core dimensions (skill variety, .71; task identity, .85; task significance, .60; autonomy, .83; and feedback from the job, .81).

**Hedonic well-being**
Mood was measured with 10 positive emotions (alert, happy, cheerful, strong, active, sociable, involved, excited, clear, and relaxed) and 10 negative emotions (drowsy, sad, irritable, weak, passive, lonely, detached, bored, confused, and tense) that were arranged as bipolar items (e.g. alert-drowsy, happy-sad). These emotions were selected as they have been used to conceptually represent the major forms of pleasant and unpleasant emotion (Csikszentmihalyi & Csikszentmihalyi, 1988; Diener, Smith, & Fujita, 1995). A shorter list was selected as more appropriate for experience sampling (Scollon, Diener, Oishi, & Biswas-Diener, 2005). The mood items were formatted as ‘slider’ questions, where respondents had to move a slider towards the bipolar adjective that best described their mood at the time that they were beeped. The slider questions were scored on a scale of 1-10, with higher scores being indicative of more positive mood. Again the order of the mood items was randomly varied for each trial. The internal reliability of the mood scale was found to be satisfactory (Cronbach’s $\alpha = .96$).

**Analyses**
To investigate the effect of job characteristics on flow and flow on hedonic well-being, HLM was used (Bryk & Raudenbush, 1992). The HLM modelling approach is an extension of multiple regression that allows investigation of the relationships between variables manifested at two levels of analysis. In longitudinal analyses there are a series
Table 1. Means (M), standard deviations (SD), and intercorrelations across individuals for all study variables (N = 40)

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<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tbody>
<tr>
<td>Flow</td>
<td>32.31</td>
<td>3.06</td>
<td>0.73**</td>
<td>0.64**</td>
<td>0.26</td>
<td>0.58**</td>
<td>0.40**</td>
<td>0.46**</td>
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<tr>
<td>Mood</td>
<td>5.91</td>
<td>1.25</td>
<td>0.60**</td>
<td>0.41**</td>
<td>0.69**</td>
<td>0.43**</td>
<td>0.53**</td>
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<tr>
<td>Skill variety</td>
<td>3.82</td>
<td>0.58</td>
<td>0.21</td>
<td>0.72**</td>
<td>0.17</td>
<td>0.30**</td>
<td></td>
<td></td>
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<tr>
<td>Task identity</td>
<td>4.12</td>
<td>0.40</td>
<td>0.14</td>
<td>0.33*</td>
<td>0.57**</td>
<td></td>
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<tr>
<td>Task significance</td>
<td>3.75</td>
<td>0.70</td>
<td></td>
<td>0.19</td>
<td>0.30*</td>
<td></td>
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<tr>
<td>Autonomy</td>
<td>3.25</td>
<td>0.71</td>
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<td></td>
<td>0.45**</td>
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<tr>
<td>Feedback</td>
<td>3.16</td>
<td>0.71</td>
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*p < .05 (one-tailed); **p < .01 (one-tailed).

of repeated measures for each individual that constitute the lowest level of variables and the individual level becomes the second level. Thus, in the current research, to examine within-individual relationships between flow and mood, at the first-level, mood was regressed on to flow for each of the 40 participants in the study. At the second level the parameters estimated at level 1 (intercepts and slopes) were regressed on level 2 variables - in this case the job characteristics. HLM 5 was used (Bryk, Raudenbush, & Congdon, 2000) to test the hierarchical models.

One of the assumptions of regression analysis is that residual effects are independent. Obviously time-series data violate this assumption of residual independence at level 1 (Hofmann, Griffin, & Gavin, 2000). Consequently level 1 models were developed that accounted for the residual autocorrelation in the data. This was accomplished by controlling for lagged flow and lagged mood in the level 1 equations. Lagged flow and mood were centred at the mean for each individual thus removing the between-individual variance in this control variable (Bryk & Raudenbusch, 1992). In the current study, we hypothesize and test a lagged hypothesis (i.e. flow predicts mood). To test this we estimated a series of cross-lagged regressions.

Results

Hypothesis 1: Between- and within-individual variation

Means, standard deviations, and inter-correlations across individuals for all study variables are presented in Table 1. Before proceeding with the tests of the hypotheses, systematic within- and between-individual variance in the ratings of flow and mood were investigated. These statistical assumptions were tested using two null models for both flow and mood (see Table 2). The results indicated that there was substantial within- and between-individual variance for both flow and mood (Flow: $\sigma^2 = 22.81$, $\tau_{00} = 8.19$; Mood: $\sigma^2 = 2.22$, $\tau_{00} = 1.45$). Although HLM does not provide a significance test for within-individual variance ($\sigma^2$), it does provide a chi-squared test that indicated that the between-individual variance was significant for both flow and mood (Flow: $\tau_{00} = 8.19$, $\chi^2(39) = 388.95$, $p < .01$; Mood: $\tau_{00} = 1.45$, $\chi^2(39) = 673.83$, $p < .01$). The intra-class correlation for the flow measure was .26, indicating that

$$\text{ICC} = (\tau_{00}/(\sigma^2 + \tau_{00}))$$.
Table 2. Parameter estimates and variance components of null models tested (N = 999)

<table>
<thead>
<tr>
<th>Model equations</th>
<th>$\gamma_{00}$</th>
<th>$\gamma_{10}$</th>
<th>$\sigma^2$</th>
<th>$\tau_{00}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Null model 1$^a$</td>
<td>32.30</td>
<td>-</td>
<td>22.81</td>
<td>8.19**</td>
</tr>
<tr>
<td>Flow$<em>j$ = $\beta</em>{0j} + r_j$</td>
<td>-</td>
<td>-</td>
<td>2.22</td>
<td>1.45**</td>
</tr>
<tr>
<td>Mood$<em>j$ = $\beta</em>{0j} + r_j$</td>
<td>5.90</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$\beta_{0j} = \gamma_{00} + U_{0j}$</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

$^a$ $\beta_{0j}$ is the average level of flow/mood for individual $j$; $\gamma_{00}$ is the grand mean of flow/mood scores; $\sigma^2 = \text{var}(r_j)$ the within-individual variance in flow/mood (computed as the average squared distance from individual momentary scores and the individual’s mean score); and $\tau_{00} = \text{var}(U_0)$ the between-individual variance in flow/mood (the variance of the 40 average flow/mood scores).

$p < .05; \; **p < .01.$

between-individual variance accounts for 26% of the total variance in flow. This would suggest that 74% of the variance is attributable to within-individual variation. For mood, 40% of the total variance was accounted for by between-individual variance, indicating that 60% of the variance was due to within-individual variation in momentary mood. These results suggest that flow varies considerably from situation to situation and that it behaves predominantly like a state construct.

We also tested whether individuals’ flow and mood ratings were randomly distributed or serially dependent (Ilies & Judge, 2002). Comparing the level 1 variance components of the lagged regression model with that of the null models indicated that the lagged measures explained four and less than one percent of the within-individual variance for flow and mood respectively.$^5$ Lagged flow was found to be a significant predictor of momentary flow (Flow: $\gamma_{10} = 0.20, p < .05$), but mood was serially independent of its lagged effect (Mood: $\gamma_{10} = 0.08, p > .05$). All subsequent models where flow was the outcome variable were controlled for the lagged effect.$^4$

**Hypothesis 2: Job characteristics and flow**

Hypothesis 2 suggested that the individual variance in flow would be associated with the job characteristics outlined by Hackman and Oldham’s model (1975). Based on theoretical arguments, the five job characteristics were hierarchically entered into the model as follows: skill variety; feedback; autonomy; task identity; and task significance. In order to test this hypothesis, two models were calculated: a random-coefficient regression model and an intercepts-as-outcomes model (see Table 3). Tests were undertaken to ascertain the proportion of variance in the intercept terms that was explained by the five job characteristics at level 2 (see Table 3). The t tests for the fixed effects in the intercepts-as-outcomes model assessed the significance of the relationships between the five job characteristics and momentary flow, while controlling for the lagged effects of flow. These tests indicated that both skill variety ($\gamma_{11} = 0.05, t(34) = 2.64, p < .05$) and autonomy ($\gamma_{12} = 0.03, t(34) = 2.12, p < .05$) were significant predictors of between-group variance in flow after controlling for

$^3$ Percent = ($\sigma^2(\text{null model}) - \sigma^2(\text{lagged effects model})$) / $\sigma^2(\text{null model})$.

$^4$ Following Ilies and Judge (2002) these results are not presented in the main models as they are not of substantive interest here.
Table 3. Parameter estimates and variance components of substantive HLM models testing the relationships between flow and job characteristics ($N = 999$)

Model equations$^a$

Random-coefficient regression
L1: $\text{Flow}_i = \beta_{0j} + \beta_{1j} (\text{Flow}_{i,t-1}) + \epsilon_{ij}$
L2: $\beta_{0j} = \gamma_{00} + U_{0j}$
L2: $\beta_{1j} = \gamma_{10} + U_{1j}$

Intercepts-as-outcomes
L1: $\text{Flow}_i = \beta_{0j} + \beta_{1j} (\text{Flow}_{i,t-1}) + \epsilon_{ij}$
L2: $\beta_{ij} = \gamma_{10} + \gamma_{11}$ (skill variety) + $\gamma_{12}$ (feedback) + $\gamma_{13}$ (autonomy) + $\gamma_{14}$ (task identity) + $\gamma_{15}$ (task significance) + $U_{ij}$
L2: $\beta_{0j} = \gamma_{00} + U_{0j}$

<table>
<thead>
<tr>
<th>Parameter estimates$^a$</th>
<th>$\gamma_{00}$</th>
<th>$\gamma_{10}$</th>
<th>$\gamma_{11}$</th>
<th>$\gamma_{12}$</th>
<th>$\gamma_{13}$</th>
<th>$\gamma_{14}$</th>
<th>$\gamma_{15}$</th>
<th>$\sigma^2$</th>
<th>$\tau_{00}$</th>
<th>$\tau_{11}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-way analysis of variance</td>
<td>32.30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>22.81</td>
<td>8.19</td>
<td>-</td>
</tr>
<tr>
<td>Random-coefficient regression model</td>
<td>25.92</td>
<td>0.20$^a$</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>21.88</td>
<td>28.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Intercepts-as-outcomes model</td>
<td>23.16</td>
<td>-0.18</td>
<td>0.05$^a$</td>
<td>0.02</td>
<td>0.03$^a$</td>
<td>0.01</td>
<td>0.02</td>
<td>21.84</td>
<td>28.71</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Note. The regression coefficients presented in the table are not standardized.

$^a$ $\gamma_{00}$ = intercept of level 2 regression predicting $\beta_{0j}$, $\gamma_{10}$ = intercept of level 2 regression predicting $\beta_{1j}$, $\gamma_{11}$-$\gamma_{15}$ = slopes of level 2 regression for each job characteristic predicting $\beta_{1j}$, $\sigma^2$ = variance in level 1 residual (i.e. variance in $r_{ij}$), $\tau_{00}$ = variance in level 2 residual for models predicting $\beta_{0j}$ (i.e. variance in $U_{0j}$), $\tau_{11}$ = variance in level 2 residual for models predicting $\beta_{1j}$ (i.e. variance in $U_{1j}$).

$^a$$t > 1.96, p < .05.$
serial dependence effects. Neither feedback, task significance nor task identity were significant predictors.

To determine the magnitude of the relationship between the two significant job characteristics and flow, we calculated separate intercepts-as-outcomes models. Using the residual variance in the intercepts, we found that skill variety accounted for 15% of the between-individual variance in flow ($\tau_{00} = 23.91$, $\chi^2(39) = 58.67$, $p < .05$), and autonomy explained 8% of the variance ($\tau_{00} = 25.72$, $\chi^2(39) = 59.45$, $p < .05$).^5

**Hypothesis 3: Flow and mood**

It was predicted that momentary flow would be related to momentary positive mood both across and within individuals. The results of the hierarchical linear model that was tested are presented in Table 4. The pooled slope parameter was significantly different from zero ($\gamma_{10} = 0.19, t(39) = 16.04, p < .01$). The direction of the pooled slope of the regression of flow on mood ($\gamma_{10}$) indicates that higher levels of flow are associated with more positive mood. The magnitude of this relationship was calculated by comparing the within-individual variance in mood from the first null model with the within-individual variance after controlling for flow. Flow accounted for 36% of the within-individual variance in mood. Similarly, comparing the level 2 variance components of random regression model and the null model indicated that flow explained 30% of the between-individual variance in mood. In sum, results tended to support the hypothesis that momentary flow was associated with momentary positive mood.

We also tested the causal direction of the relationship between flow and mood using lagged measures of mood and flow, respectively. Results suggested that lagged flow was predictive of mood ($\gamma_{20} = 0.11, t(39) = 2.28, p < .05$), and that lagged mood was not associated with later flow ($\gamma_{20} = 0.10, t(39) = 0.74, p > .05$).

**Discussion**

The current study tried to understand the nature of flow at work by longitudinally tracking the flow state in a sample of architecture students working on studio projects. Specifically, we want to sift out the state and trait components of flow, to ascertain which work-related characteristics were associated with flow, and to determine the relationship between momentary flow and positive mood. Our results suggested that both within-individual and between-individual variance comprised flow with the former accounting for 74% of the total variance. Thus, flow has both state and trait components with the former predominating. Second, our data suggest that skill variety and autonomy are the two job characteristics that make unique independent contributions to the predictions of flow. The remaining three job characteristics

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^5 $R^2 = (\tau_{00}(\text{random regression}) - \tau_{00}(\text{intercepts-as-outcomes}))/\tau_{00}(\text{random regression})$.

^6 $R^2$ for level 1 model = ($\sigma^2(\text{one-way ANOVA model}) - \sigma^2(\text{random regression model})) / \sigma^2(\text{one-way ANOVA model})$.

^7 $R^2$ for level 2 model = ($\tau_{00}(\text{one-way ANOVA model}) - \tau_{00}(\text{random regression model})) / \tau_{00}(\text{one-way ANOVA model})$.

^8 $R^2 = (\sigma^2(\text{control model}) - \sigma^2(\text{random regression model})) / \sigma^2(\text{one-way ANOVA model}) = (165.15 - 112.77) / 165.15 = 0.32$.

^9 $R^2 = (\tau_{00}(\text{random regression model}) - \tau_{00}(\text{control model}))/\tau_{00}(\text{one-way ANOVA model}) = (71.79 - 62.36) / 128.77 = 0.07$. 
Table 4. Parameter estimates and variance components testing relationship between flow and mood (N = 999)

<table>
<thead>
<tr>
<th>Model equations</th>
<th>$\gamma_{00}$</th>
<th>$\gamma_{10}$</th>
<th>$\sigma^2$</th>
<th>$\tau_{00}$</th>
<th>$\tau_{11}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Random-coefficient regression model $L^a$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L1: Mood$<em>i$ = $\beta_0 + \beta</em>{ij}$ (Flow$_i$) + $r_i$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L2: $\beta_0 = \gamma_{00} + U_0$</td>
<td>$-0.27$</td>
<td>$0.19^*$</td>
<td>$1.41$</td>
<td>$2.95$</td>
<td>$0.00$</td>
</tr>
<tr>
<td>L2: $\beta_{ij} = \gamma_{10} + U_{ij}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$^a\gamma_{00}$ is the mean of the intercepts across groups; $\gamma_{10}$ is the mean of the slopes across groups; $\sigma^2(r_i)$ is the level 1 residual variance; $\tau_{00}(U_0)$ is the variance in intercepts; and $\tau_{11}(U_{ij})$ is the variance in slopes. $^*p < .01$.

(feedback, task significance, and task identity) did not contribute to the prediction. Finally, our results showed that the experience of flow preceded changes in mood.

Howard Gardner (2002) has pointed out that one of the reasons that psychologists have neglected to study the actual experience of work has been the lack of an appropriate methodology to scientifically study internal feelings. In this context, it is appropriate to note that our results emerge from the use of a rigorous methodology that allows the testing of longitudinal relationships and addresses the known problems of cross-sectional survey data (e.g. Scollon, Kim-Prieto, & Diener, 2003; Smyth & Stone, 2003). We believe that the use of the ESM methodology substantially advances the study of flow and offers considerable advantage in other areas of organizational research. ESM has been used to assess flow experiences in daily life among elementary and secondary school students (Csikszentmihalyi & Hunter, 2003), students (Carli, Delle Fave, & Massimini, 1988; Csikszentmihalyi & Larson, 1984), family members (Larson & Richards, 1994), psychiatric patients (Massimini, Csikszentmihalyi, & Carli, 1987), and nursing home residents (Voelkl, 1990). The product of such a methodology is a dense and systematic description of the external conditions and subjective experience of flow in different situational contexts and at different moments in time. Despite the fact that ESM allows for the study of the interactions between person and situational variables without the limitations of traditional research designs (Hormuth, 1986; Illies & Judge, 2002), relatively little use has been made of ESM in organizational psychological research.

The current study had three main findings. First, we have argued that it is important to distinguish between the state and trait components of flow. The results of the present research suggest that flow, or optimal experience, is predominantly a situational state of mind rather than a trait or disposition. We found that approximately three quarters of the variance in flow was attributable to situation-to-situation fluctuations. Dispositional variables or traits tend to be stable across time and place (Zuckerman, 1983). Consequently such variables are less amenable to manipulation. State variables on the other hand are dynamic and change across time and situation. State variables are capable of being manipulated and are likely the result of an interaction between personal dispositions and the environment. Previous research on flow (e.g. Demerouti, 2006; Eisenberger et al., 2005) has tended to blur the state-trait distinction. Flow has been treated as a state variable, in that situational variables have been correlated with it, but measured as a trait construct, in that participants' flow experiences have been assessed across a broad range of activities. Furthermore, both of these studies were
cross-sectional in nature making it impossible to sift out between-individual variation from within-individual variance.

Our study allowed this separation and resulted in the finding that most of the variance in flow was within-individual giving rise to the possibility that the experience of flow is governed by characteristics of the task or situation. In the particular context of the workplace, our results suggest that tasks can be designed to enhance the likelihood of experiencing flow. Just what aspects of task design are important is informed by our second finding.

The second finding of the current research was that certain work or task characteristics are associated with optimal experience. Earlier research by Demerouti (2006) has found that motivating job characteristics are correlated with the experience of flow at work. However, Demerouti did not specifically identify which job characteristics were associated with flow. Our findings indicate that flow was associated with studio work that was perceived as requiring different skills and that allowed the student creative choice and discretion in their work. That these two job characteristics should be correlated with flow may be due to the nature of the work that we studied. Architectural work is cognitive in nature, with students having to use logic and reasoning to identify the strengths and weaknesses of alternative solutions or approaches to problems. Architecture studio requires students to engage in complex problem solving where they have to independently identify problems and review related information to develop and evaluate options and implement unique solutions. The architectural student is more isolated, less monitored, and engaged in activities that are more cognitively complex and creative in nature than many other kinds of work. Even though a different state of mind was investigated in the current research, the results lend support to Hackman and Oldham's (1975) contention that core job characteristics are important in generating critical psychological states (such as flow).

Thus, organizations wishing to enhance employees' experience of, or likelihood of experiencing flow, are well-advised to design tasks that incorporate these elements of skill variety and autonomy. Our findings suggest that engaging in tasks that require complex skills, resolving challenging problems and expressing creativity leads to the experience of flow.

Finally, the current findings also indicated a significant and reliable relationship between flow and positive mood. Students who experienced higher levels of flow also reported being more alert, happy, involved, excited, and so forth. This is consistent with previous research that has found flow to be associated with hedonic well-being, or positive mood (Eisenberger et al., 2005; Nakamura & Csikszentmihalyi, 2002). However, the rationale for this relationship has been criticized for its circularity. Research on flow has tended to focus on self-reports of single moments of well-being. The current study attempted to overcome this methodological shortcoming by randomly surveying a broad range of work activities, not just optimal ones, over several weeks. LeFevre (1988) found that motivation, activation, and satisfaction were higher in flow experienced at work, but that affect was not. In fact, mildly negative mood was reported by engineers and managers who had experienced flow. Positive affect was more likely to be related to flow in leisure activities. The difference between these and the current findings may again be in the nature of work that was studied. In architectural studio work many of the tasks that are associated with high levels of flow are the same as those experienced in leisure activities (e.g., drawing and model making).

The finding that flow is associated with positive mood has significant theoretical and practical implications. Frederickson (1998, 2001) has argued that positive emotions
broaden individual resources and thought-action repertories. There is growing evidence that the psychological well-being of workers is predictive of employee performance, job satisfaction, and turnover (Cropanzano & Wright, 2001; Staw & Barsade, 1993; Wright & Bonett, 2007; Wright & Staw, 1999). We have argued that flow is a form of eudaimonic well-being. Our findings suggest that flow may be a critical psychological state that is associated with positive mood, a core component of psychological well-being. Furthermore, we established that the majority of variance in flow is determined by situational characteristics rather than individual dispositional factors. This has important practical implications for the design of work. Providing work that is high in autonomy and skill variety is more likely to induce flow which is likely to have beneficial consequences for the organization. Flow has been found to be positively associated with optimal functioning, specifically with both in-role and extra-role performance (Demerouti, 2006; Eisenberger et al., 2005). Eisenberger et al. (2005) have shown that the relationship between flow and employee performance is partially mediated by positive mood. Earlier research has indicated that the relationship between positive mood and performance is particularly pertinent to tasks that require spontaneity and creativity (Eisenberger & Rhoades, 2001; George & Brief, 1992). Specifically, positive mood has been shown to promote creative thinking. The longitudinal nature of our research contributes to the literature that has established a relationship between optimal experiences at work and positive mood by suggesting that this association is consistently reliable across time and situations. Clearly flow is an important positive psychological variable that has been found to be associated with flourishing and one that can be influenced by the design of work.

Potential limitations of the research
Although the ESM used in the current study offers considerable advantage to the study of flow and other aspects of organizational behaviour, our application of the method suggests several potential limitations to be addressed by future research. First, participants in the research were architecture students engaged in work-like but not work tasks suggesting the need to replicate our findings in the context of paid employment. The experience of employment is more than performing a set of tasks (Kelloway, Gallagher, & Barling, 2005) and the extent to which our findings generalize to the context of paid employment remains an empirical question. Second, it could be argued that there was not much variation in the nature of the work that we investigated, that is architectural studio work. Consequently any within-subject variance could be attributable to dispositional variations rather than a change in the work situation. However our sample was drawn from three different studio sessions. Students were responsible for designing unique solutions to architectural problems. The nature of the work varied considerably and included a variety of tasks such as reading, drawing, computer programming, model building, writing, computer rendering and data analysis. Nonetheless, the variance in task characteristics was relatively small. However, this would indicate that the strength of relationships between the job characteristics and flow were underestimated in our sample.

Third, in this study we focus on a single ‘narrow-band:’ indicator of well-being (i.e. mood). In doing so, we parallel earlier studies which have also focused on the relation between flow and mood (e.g. Eisenberger et al., 2005) Broader conceptualizations of well-being would suggest going beyond measures of affect to include measures such as aspiration or self-efficacy (e.g. Warr, 1987) and future research would
be well advised to consider broadening the domain of inquiry to more fully understand the relationship between flow and well-being.

Finally, we used a short composite measure of flow in our research. This was primarily dictated by the ESM that we used, that necessitates the use of short scales that are minimally disruptive of the experience being assessed. There seems to be confusion as to an appropriate psychometric form with which to assess flow. There is a growing body of theory to suggest that flow is a multidimensional construct (Jackson & Marsh, 1996; Marsh & Jackson, 1999), yet these dimensions are highly correlated. Furthermore, composite operationalizations of flow fail to distinguish between the preconditions or antecedents of flow (e.g. challenge-skill balance, clear goals) and the components of optimal experience (e.g. enjoyment of, and concentration on the activity). Future research needs to move away from uni-dimensional conceptualizations of flow, and to distinguish between the antecedents and qualities of the construct.

Conclusion
Recently there has been an interest in the application of positive psychology to understanding organizational behaviour (Cameron et al., 2003; Luthans, 2001, 2002; Turner et al., 2002). Flow is a construct that is at the centre of the positive psychology movement (Seligman & Csikszentmihalyi, 2000) and provides researchers with a valuable conceptual framework with which to study the nature and process of work experiences. Luthans has termed the application of positive psychology to workplace issues positive organizational behaviour (POB; Luthans, 2002). He defines POB as ‘the study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement’ (Luthans, 2002, p. 58). The focus of POB is on strengths and virtues that are measurable and contribute to better performance. Luthans (2002) outlines several criteria associated with constructs if they are to make a contribution to POB. Specifically they should be positive, measurable, capable of being developed, and associated with optimal performance. Our research has indicated that flow clearly fulfills these criteria. Furthermore, in order for a POB construct to be developmental it has to be state-like in nature. We have shown that flow is predominantly a state construct. This is concordant with Csikszentmihalyi’s (1990) definition of flow as engagement in a specific activity. He defined flow as ‘the state in which people are so intensely involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it’ (Csikszentmihalyi, 1990, pp. 3–4). Luthans (2002) has identified five variables that fulfil the criteria for making a contribution to POB: confidence/self-efficacy; hope; optimism; SWB/happiness; and emotional intelligence. The current research demonstrates that flow also has the potential to be a meaningful positive psychological construct that mediates the relationship between certain core characteristics of work and well-being.

References


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