

A metamodel approach towards self-determination theory: a study of New Zealand managers' organisational citizenship behaviours

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The present study brings together the multiple dimensions of self-determination theory (SDT), the three facilitators (global aspirations, global motivation and mindfulness), the three needs (autonomy, competence and relatedness) and perceived autonomous support (PAS) towards the organisational citizenship behaviours (OCBs) of 386 New Zealand managers. SDT suggests that individuals with higher SDT dimensions will achieve greater motivation and well-being; however, few studies include more than one SDT dimension. The findings show that overall the majority of SDT dimensions were significantly correlated to OCB dimensions. Moderated regression analysis found that autonomous motivation was positively related to OCBs with controlled motivations negatively related to OCBs. PAS and most of the need satisfaction dimensions were also positively related to OCBs. Intrinsic aspirations were only related to OCBs individual. PAS was also tested as a moderator of SDT dimensions, and five significant interactions were found to influence OCBs individual and one to influence OCBs organisational. Overall, the highest levels of OCBs were reported by managers with higher than average PAS and those who rated highly on the SDT dimensions. This study provides strong and consistent support that SDT dimensions influence OCBs, and the consistent influence of PAS highlights the importance of workplace context.

Keywords: metamodel; motivation; organisation citizenship behaviours (OCBs); self-determination theory; well-being

Introduction

Self-determination theory (SDT) is a theory of motivation that maintains that individual pursuit of autonomy, challenge and enhanced relationships aid individual well-being. SDT maintains that the pursuit of these experiences culminate in an authentic sense of self that is, crucially, regulated by the self (Deci and Ryan 2000; Vansteenkiste et al. 2007; Ryan and Deci 2008; Greguras and Diefendorff 2009, 2010). SDT is a composite of five separate, yet integrated, mini theories of well-being. These distinct mini theories are incorporated into a 'meta' model of SDT. Hence, SDT is referred to as a metamodel for framing motivation and well-being studies (Deci and Vansteenkiste 2004). The five separate mini theories that aid well-being are known as the three facilitators of (1) aspirations, (2) motivations and (3) mindfulness, which assist the individual in meeting (4) the three basic needs for autonomy, competence and relatedness. Finally (5) the context, termed perceived autonomous support (PAS) aids the degree to which individuals are able to integrate these experiences of well-being into a sense of self (Deci and Ryan 2000).

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The present study makes three major contributions. First, it is the first to test the full metamodel of SDT within the workplace. Previous studies tend to focus on only one mini theory at a time: Therefore, only single mini theories (which are referred to hereon as dimensions) of SDT, not the entire metamodel of SDT, have been tested in the workplace. Second, it is the first study to test OCBs by linking SDT dimensions to well-being that is associated with the workplace. Third, it tests the potential moderating effects of PAS and, ultimately, highlights the importance of SDT dimensions towards OCBs and the additional benefits PAS creates for employees. The SDT dimensions are discussed in the following paragraphs.

Aspirations

SDT asserts that it is the nature of a person's life goals (aspirations) that enhances or diminishes well-being. It distinguishes between intrinsic aspirations, such as personal growth, affiliation and community contribution, and extrinsic aspirations, such as financial success, physical attractiveness and fame (Kasser and Ryan 1993, 1996). Intrinsic aspirations reflect people's inherent growth orientation and are considered to be innately satisfying (Deci and Ryan 2000). In contrast, extrinsic aspirations have an outward orientation: 'having' orientation (Van Boven and Gilovich 2003) and success is contingent upon attainment of external signs of self-worth, such as image and fame (Patrick, Neighbors and Knee 2004). Extrinsic aspirations manifest in ill-being such as stress and dissatisfaction (Deci and Ryan 2000). This is because extrinsically orientated individuals are likely to have contingent self-regard, where self-worth is dependent on obtaining external signs of success. For example, external evaluation of one's wealth, attractiveness and fame is what drives a person (Kernis 2003). As such this external regard in turn undermines well-being (Ryan and Deci 2008). Extrinsic aspirations have been related positively to anxiety and depression and negatively to vitality, self-actualisation, life satisfaction and socially adaptive functioning (Sheldon, Ryan, Deci and Kasser 2004). Intrinsic aspirations are consistent with requirements for the satisfaction of the needs for autonomy, competence and relatedness (explained further below) (Vansteenkiste et al. 2007), and have been found to relate positively with outcomes such as job satisfaction, flexibility and overall positive adjustment (Vansteenkiste et al. 2007). Consequently the pursuit of extrinsic aspirations has been associated with poorer well-being (Sheldon and Kasser 2008), reduced pro-social behaviour (Duriez, Vansteenkiste, Soenens and De Witte 2007) and less optimal functioning (Kasser and Ryan 1993, 1996; Deckop, Jurkiewicz and Giacalone 2010). Conversely, intrinsic aspirations are associated with well-being, positive psychological functioning and flourishing (Sheldon et al. 2004; Vansteenkiste et al. 2007; Sheldon and Filak 2008).

Motivation

SDT asserts that well-being is enhanced when engagement in an activity is freely chosen, termed autonomous motivation. Alternatively, being pressured to undertake an activity, termed controlled motivation, results in reduced well-being. Autonomous motivation represents high-quality motivation, and is characterised as the tendency towards internalised self-regulation. As such, intrinsic interest or engagement in an activity that is in accordance with one's values and beliefs represents autonomous motivation (Deci and Ryan 2000; Olesen, Thomsen, Schnieber and Tønnesvang 2010). For example, an employee who works long hours on a project that is interesting or important to him/her is autonomously motivated. Controlled motivation, the less favoured type of motivation,

occurs when individuals engage in activities because they feel pressured or controlled. This pressure can stem from internal intra-psychic constraints, such as ego-enhancing activities ('being the manager enhances my ego'), or external pressure (such as working on an activity to ensure payment) (Deci and Ryan 2000). As such, controlled motivation has been found to exacerbate feelings of conflict, stress and pressure, and hence sub-optimal functioning (Deci and Ryan 2000). Alternatively, adopting autonomous motivation yields positive effects in terms of greater well-being and performance in activities (Ryan and Deci 2008), a finding validated by research conducted in the workplace (see Gagné and Deci 2005; Van den Broeck, Vansteenkiste and De Witte 2008). Furthermore, autonomous motivation has been negatively related to anxiety, exhaustion, burnout and turnover intentions (Fernet, Guay and Sénécal 2004; Milette and Gagné 2008; Parker, Jimmieson and Amiot 2010), and positively related to work engagement (Richer, Blanchard and Vallerand 2002), affective organisational commitment (Gagné, Chemolli, Forest and Koestner 2008) and job performance (Bono and Judge 2004).

Mindfulness

Mindfulness is the last facilitator and is characterised by a non-judgmental and open orientation to present circumstances and current situations (Martin 1997). Mindfulness fosters a fuller awareness of what is occurring in the present, and, as such, is conducive to behaviours that are congruent with individual motivation and well-being (Brown and Ryan 2003). SDT asserts that whether or not people take ownership for their own well-being and behaviour is based on the self endorsement of their actions: this includes mindful reflection of one's underlying motivation (Chirkov 2010). When people are mindful and aware of what is really occurring they are in a better position to make meaningful choices and to act in an integrated manner. A core characteristic of mindfulness has been described as an *open* or *receptive* awareness and attention to the current experience or present reality (Kabat-Zinn 2003). Therefore, when individuals behave impulsively or automatically, without awareness of, or attention to, their thinking patterns and behavioural tendencies, mindfulness is compromised (Brown and Ryan 2003; Ryan and Deci 2008). Mindfulness has received substantial attention with regard to its relationship with well-being (e.g. Brown and Ryan 2003; Weinstein, Brown and Ryan 2009) and stress reduction (e.g. Grossman, Niemann, Schmidt and Walach 2004; Shapiro, Astin, Bishop and Cordova 2005; Weinstein and Ryan 2011) and has been associated only recently with employee well-being and performance (Dane 2011).

Jimenez, Niles and Park (2010) found support for the important role of mindfulness on well-being. Their findings showed that higher levels of mindfulness were associated with higher levels of positive emotions, mood regulation expectancies and self-acceptance, which, in turn, were all negatively related to depressive symptoms. From an SDT perspective, evidence from recent research underscores the importance of mindfulness in promoting autonomous regulation (Ryan and Deci 2008). Brown and Ryan (2003) showed that both within and between person levels of analysis, an association between greater mindfulness and autonomous self-regulation was evident. More recently, SDT studies have shown that people who are more mindful embrace more intrinsic (as opposed to extrinsic) values and there is less discrepancy between what they have and what they want (Brown, Ryan and Creswell 2007).

The three needs

Within SDT the unifying concept of psychological needs provides the 'framework for integrating findings' (Deci and Ryan 2000, p. 263). With SDT, a critical issue in the effects

of goal pursuit, motivation and attainment concerns the degree to which people are able to experience the psychological needs of autonomy, competence and relatedness (Sheldon and Niemiec 2006; Ryan and Deci 2008; Sheldon and Filak 2008). These three needs are considered necessary for optimal functioning. The *need for autonomy* is defined as a desire to act with a sense of freedom, choice and volition; to be the creator of actions and to feel psychologically free from others' control and expectations (Deci and Ryan 2000). The *need for competence* represents the desire to feel capable, master the environment and to bring about desired outcomes (White 1959; Deci and Ryan 2000). Competence is prominent in those with the propensity to explore and influence the environment, and to engage in challenging tasks to test and extend their skill, that aids a sense of accomplishment. Finally, the *need for relatedness* is conceptualised as the inherent predisposition to feel connected to others: to be a member of a group, and to have significant emotional ties, beyond mere attachment, to others (Baumeister and Leary 1995; Deci and Ryan 2000). Therefore, the need for relatedness is satisfied if people experience a sense of unity and maintain close relationships with others.

All three needs are considered essential to well-being (Deci and Ryan 2000). Various studies have confirmed the positive versus negative consequences of satisfaction versus frustration of the three needs (Deci and Ryan 2000). The needs for autonomy, competence and relatedness have been shown to relate positively to employees' work related well-being in terms of task and job satisfaction, work engagement, learning, affective commitment, job performance, self-rated performance, intrinsic motivation, organisational commitment, organisational citizenship behaviours (OCBs), life satisfaction and general well-being (Lynch, Plant and Ryan 2005; Vansteenkiste et al. 2007; Van den Broeck et al. 2008; Greguras and Diefendorff 2009, 2010).

Perceived autonomy support

Central to SDT is the role that the environment plays in supporting, or hindering, well-being. Thus, the environment, not only the individual factors listed above, is crucial in enabling well-being (Gagné 2003; Gagné, Ryan and Bargmann 2003). According to SDT, all people have the capacity to pursue growth and development, but success in experiencing well-being is dependent upon the environment within which these opportunities are sought. Within the workplace, motivation and well-being are likely to be satisfied when the environment supports self-determination; this is termed PAS (Ryan and Deci 2008). Deci, Connell, Ryan and Chirkov (1989), using an intervention study, found that the method in which feedback was given to employees enhanced PAS and positive work-related outcomes. They found that feedback that was non-controlling and provided for choice and initiative, improved attitudes and trust within organisations. Overall, when Deci et al (1989) compared the findings from the controlled intervention site to the other sites, the training increased PAS. The changes crossed over to subordinates, who reported greater trust in the organisation, felt supervision was of a higher quality, and experienced increased job-related satisfaction.

Gagné (2003) showed that, in a volunteer work organisation, the levels of PAS related positively to the needs satisfaction of the volunteers, which in turn related positively to the amount of time they volunteered for the activity, and negatively to the likelihood of their leaving the organisation. Baard, Deci and Ryan (2004) found support, in both Bulgarian and American samples, for a model where PAS was related to the satisfaction of employees' psychological needs, which was then related to employees' higher performance evaluations, engagement in their work and well-being. Richer and Vallerand

(1995) found that PAS stimulated autonomy and competence, while other studies have shown that PAS can aid employees' acceptance of change (Lynch et al. 2005; Gagné, Koestner and Zuckerman 2000). Furthermore, Hagger, Chatzisarantis, Barkoukis, Wang and Baranowski (2005) found that PAS was significantly related to a number of outcomes, including attitudes and intentions, across a number of different sample settings (British, Greek, Polish and Singaporean). Consequently, the direct effects of PAS have been supported in a wide range of national settings.

Organisational citizenship behaviours

The five separate SDT dimensions are now applied to a workplace outcome. OCBs are defined as 'discretionary behaviours that are not directly or explicitly recognised by the formal reward system and that, in the aggregate, promote the effective functioning of the organisation' (Organ 1988, p. 4). OCBs are the extra role behaviours that go beyond the directed formal obligations prescribed in job descriptions (Katz and Kahn 1978). Such behaviours include an employee's willingness to follow rules, persist, volunteer, help and co-operate (Borman and Motowidlo 1993). Because of the high competition rates, employee recruiters have been found to prefer to employ those who can be expected to go the extra mile in the workplace (Chan, Taylor and Markham 2008). Organ, Podsakoff and MacKenzie (2005) defined OCBs as discretionary employee behaviours performed for the benefit of the organisation or co-workers that exceed nominal job requirements and which are not formally recognised by the organisation. In that definition, the concept has been classified into two directions: (1) OCBs that benefit the individual and (2) OCBs that benefit the organisation. Researchers, such as Salam, Cox and Sims (1996), argued that OCB is really interactive and 'social' in nature. Consequently, managers' OCBs have been found to be particularly important in enhancing team level OCBs (Yaffe and Kark 2011).

OCB individual includes self-disciplined behaviour, such as following rules, putting forth effort, demonstrating commitment and motivation and taking the initiative to solve a problem at work (Calson, Witt, Zivnuska, Kacmar and Grzywacz 2008). It can also include OCBs towards individuals, such as helping others, assisting supervisors, listening to others, helping new employees and passing along information to co-workers (Chen, Niu, Wang, Yang and Tsaur 2009). OCB organisation is composed of interpersonally oriented behaviours that contribute to organisational accomplishment. It includes behaviours that assist in the building and mending of relationships, putting people at ease, encouraging cooperation, increasing consideration of others and expressing compassion and sensitivity (Carlson et al. 2008). It also includes behaviours, such as attending non-required meetings and sharing ideas with others, which function to keep workers informed of organisational strategies and to engage them in efforts to improve the organisation (Lambert 2000).

Hypotheses

Based on the SDT literature above, we hypothesise a number of direct positive relationships with OCBs. We suggest, that given the beneficial role of intrinsic aspirations, autonomous motivations and mindfulness, these dimensions of SDT will be positively related to OCBs. Alternatively, we suggest that extrinsic aspirations and controlled motivations will be negatively related to OCBs. In this regard, workers who have intrinsic, as opposed to extrinsic, aspirations are more likely to engage in work roles beyond their contracts. Similarly, workers who are predominantly driven by autonomous, rather than

controlled, motivation, and who are more mindful and aware of the present, are more likely to engage in OCBs.

- Hypothesis 1:* Higher intrinsic aspirations will be positively related to OCBs.
Hypothesis 2: Higher extrinsic aspirations will be negatively related to OCBs.
Hypothesis 3: Higher mindfulness will be positively related to OCBs.
Hypothesis 4: Higher autonomous motivations will be positively related to OCBs.
Hypothesis 5: Higher controlled motivations will be negatively related to OCBs.

In addition to testing the facilitators of SDT (aspirations, mindfulness and motivations), we also test the influence of the three needs satisfaction towards OCBs, suggesting that workers who have experienced the three needs of autonomy, competence and relatedness will be more willing to engage in extra-role behaviours. For example, workers who feel that their needs for competence in the workplace are being met may, as a result of their enhanced competence, demonstrate greater citizenship behaviours, such as giving greater assistance to colleagues and the organisation. This leads to the next set of direct hypotheses.

- Hypothesis 6:* Higher need for autonomy satisfaction will be positively related to OCBs.
Hypothesis 7: Higher need for competence satisfaction will be positively related to OCBs.
Hypothesis 8: Higher need for relatedness satisfaction will be positively related to OCBs.

Interaction effects

As noted above, SDT studies have found that PAS leads to greater satisfaction of the needs for competence, relatedness and autonomy and, in turn, to more job satisfaction, higher performance evaluations, greater persistence, greater acceptance of organisational change and better psychological adjustment (Ilardi, Leone, Kasser and Ryan 1993; Gagné et al. 2000; Deci, Ryan, Gagné, Leone, Usunov and Kornazheva 2001; Baard et al. 2004; Gangé and Deci 2005). Overall, there is strong support for the notion that PAS has a positive influence on outcomes. However, as noted earlier, studies utilising SDT dimensions do not typically test the metamodel, which includes all the aforementioned dimensions. Furthermore, while SDT dimensions have been widely tested, they are seldom tested in the workplace context. The present study asserts that the workplace provides an additional and important context for studies of SDT and indeed, the previously mentioned studies have shown PAS to have an important direct effect on outcomes. We suggest that PAS will similarly directly influence OCBs to such a degree that employees who feel their autonomy is supported in the workplace will reciprocate with higher OCBs, consistent with social exchange theory (Haar and Spell 2004).

- Hypothesis 9:* Higher PAS will be positively related to OCBs.

In addition to direct effects, we also test the potential moderating effects of PAS on the various SDT dimensions to determine whether PAS plays a role in enhancing, or buffering, these SDT dimensions effects. We suggest that the workplace context of PAS will further enhance positive SDT dimensions (intrinsic aspirations, autonomous motivations, mindfulness and the three needs), and buffer negative SDT dimensions (extrinsic aspirations and controlled motivations). For example, employees with high

autonomous motivation may be more willing to engage in OCBs as a result of being intrinsically motivated by their work. However, employees in organisations that fail to support autonomy would likely exhibit lower OCBs. Alternatively, higher PAS should lead to increased OCBs. While the moderating effects of PAS have been tested with motivation (Guay, Boggiano and Vallerand 2001), it has not been comprehensively tested with the entire metamodel, which opens an area for further contribution.

Hypothesis 10: PAS will moderate (enhance) the effects of the positive SDT dimensions (intrinsic aspirations, mindfulness, autonomous motivation and three needs satisfaction) towards OCBs, while buffering the negative SDT dimensions (extrinsic aspirations and controlled motivation) towards OCBs.

Method

Sample and procedure

Data were collected from over 250 organisations, spread across a wide regional location in New Zealand. Supervisors and managers were the target of this survey, and a question was included in the beginning of the survey to confirm that participants were in a position of authority (supervisor or manager). A total of 418 surveys (from 600) were returned, for a response rate of 69.7%. Survey one included items relating to the three facilitators, three needs, PAS, as well as demographic variables. Two weeks later survey two, containing the OCB measure, was administered to the same participants, and this was completed by 386 respondents, for an overall response rate of 64.3%. On average, the participants were 37.4 years old ($SD = 13$), 58% were male, married (59%), parents (54%) and union members (12%). Respondents worked 39.7 hours per week ($SD = 13.4$), had job tenure of 5.7 years ($SD = 6.6$) and organisational tenure of 9 years ($SD = 9.3$). Education levels were diverse, with 31.3% having a high school qualification, 23.2% a technical college qualification, 33.5% a university degree and 12% a postgraduate qualification. By race, 62.6% were European/White, 23.3% Asian, 8.4% Maori (indigenous people of New Zealand), 3.1% Indian, 1% Pacific Islander and 1.6% other ethnicity. By industry sector, 64.3% were from the private sector, 29.5% public sector and 6.2% from the not-for-profit sector, and, on average, managers worked in firms with 580 employees ($SD = 2215$).

Measures

Independent variables

Aspirations were assessed using the 30-item Aspirations Index by Kasser (2002), coded 1 = not at all, 5 = very. Questions followed the stem 'Please circle the number that best represents your opinion relating to the following goals or aspirations that you hope to accomplish over the course of your life'. These items connect to six dimensions, which relate to *intrinsic aspirations* (meaningful relationships, personal growth and community contributions) and *extrinsic aspirations* (wealth, fame and image). Sample items are 'To have many expensive possessions' (wealth aspirations) and 'To gain increasing insight into why I do the things I do' (personal growth aspirations). As per Brown and Kasser (2005), we calculated both global aspiration dimensions (intrinsic and extrinsic) by totalling each of the three dimensions. Individually, each dimension had adequate reliability ($0.75 < \alpha < 0.91$).

Motivations were calculated using 18 items by Tremblay, Blanchard, Taylor, Pelletier and Villeneuve (2009), coded 1 = does not correspond at all, 5 = corresponds exactly. These items relate to six dimensions: *autonomous motivation* (intrinsic motivation, integrated regulation and identified regulation) and *controlled motivation* (introjected regulation, external regulation and amotivation). We used the same technique as Blanchard, Tremblay, Mask and Perras (2009), where the more important autonomous versus controlled dimensions are weighted (3 × intrinsic motivation and amotivation; 2 × integrated regulation and external regulation; 1 × identified regulation and introjected regulation). Sample items are 'Because I derive much pleasure from learning new things' (intrinsic motivation) and 'I don't know why, we are provided with unrealistic working conditions' (amotivation). Individually, each dimension had adequate reliability ($0.80 < \alpha < 0.88$).

Mindfulness was measured using the 15 items of Brown and Ryan (2003), coded 1 = never, 5 = all of the time. A sample item is 'I could be experiencing some emotion and not be conscious of it until sometime later'. All 15 items are reverse scored: the higher score indicates greater mindfulness and awareness of the present ($\alpha = 0.91$).

The three needs were measured using 21 items by Deci et al. (2001), coded 1 = not at all true, 5 = very true. Questions followed the stem 'How important is the following to you ...' and items were spread amongst the three needs. *Autonomy* was measured using seven items: a sample item is 'I feel like I can make a lot of inputs to deciding how my job gets done' ($\alpha = 0.65$). *Competence* was measured using five items: a sample item is 'People at work tell me I am good at what I do' ($\alpha = 0.63$). The item 'I have been able to learn interesting new skills on my job' was dropped because it dragged the reliability down too low (if included $\alpha = 0.52$). *Relatedness* was measured using eight items: a sample item is 'I get along with people at work' ($\alpha = 0.78$). Despite the reliability scores for autonomy and competence being below the established acceptable coefficient α mark of 0.70 (Nunnally 1978), these scores are similar to others used in the literature. For example, Greguras and Diefendorff (2009), in a study of Singapore workers, reported similarly low reliabilities on these two needs: autonomy ($\alpha = 0.66$) and competence ($\alpha = 0.67$). These poor reliabilities may be due to the measure itself, especially with regards to how it relates to these two dimensions.

Moderator variable

PAS was measured by six items by Baard et al. (2004) coded

1 = strongly disagree, 5 = strongly agree. A sample item is 'My manager listens to how I would like to do things' ($\alpha = 0.92$). A higher score indicates employees perceive greater support for autonomy.

Dependent variables

OCB individual and *OCB organisation* were measured using eight items for each variable, adapted from Lee and Allen (2002), and coded 1 = never, 5 = always. Sample items are 'Help others who have been absent' (individual, $\alpha = 0.87$) and 'Offer ideas to improve the functioning of the organisation' (organisation, $\alpha = 0.91$).

Control variables

We controlled for personal variables: age (in years), gender (1 = female, 0 = male), highest level of education (1 = high school, 2 = technical college qualification, 3 = university

degree, 4 = postgraduate qualification). In addition, organisational variables were controlled because of the wide range of firms and industries: private sector (dummy variable 1 = yes, 0 = no), and firm size. Firm size was measured by the number of employees. While this variable had a high level of skewness (6.9), a log transformation was conducted on firm size to induce normality (Stone and Hollenbeck 1989). After the log transformation, the skewness was within normal boundaries of ± 1.0 (0.82).

Analysis

Hierarchical regression analysis was used to analyse the data, with OCBs as the criterion variables. Control variables were entered in Step 1 (age, gender, education, private sector and firm size) and the facilitators entered in Step 2 (intrinsic aspirations, extrinsic aspirations, mindfulness, autonomous motivation and controlled motivation). The three needs dimensions (autonomy, competence and relatedness) were entered in Step 3. The potential moderator (PAS) was entered in Step 4 and the interactions between PAS and the eight-predictor variables were entered in Step 5. To address issues of multi-collinearity, mean centering of the interaction terms was undertaken (Aiken and West 1991).

Results

Descriptive statistics for the study variables are shown in Table 1. The table shows that towards both dimensions of OCBs, intrinsic aspirations, autonomous motivation, all three needs satisfaction dimensions and PAS are significantly correlated (all at $p < 0.01$). Mindfulness is significantly correlated only with OCB organisation ($p < 0.05$), while extrinsic aspirations and controlled motivations are both not significantly correlated.

Results of the hierarchical regression for Hypotheses 1–10 are shown in Tables 2 and 3.

Direct effects

Table 2 shows that towards OCB individual, intrinsic aspirations are significantly related ($\beta = 0.10, p < 0.1$), as are autonomous motivation ($\beta = 0.12, p < 0.05$) and controlled motivation ($\beta = -0.12, p < 0.1$). From the R^2 change figures in Step 2, we can see that facilitators accounted for a modest amount of variance only (5%, $p < 0.05$). The three needs dimensions of autonomy ($\beta = 0.18, p < 0.05$) and relatedness ($\beta = 0.12, p < 0.1$) are also significant predictors, and the R^2 change (Step 3) shows they also account for a modest amount of variance (6%, $p < 0.01$). In Step 4, PAS is shown to be a significant predictor ($\beta = 0.29, p < 0.001$) and also accounts for a modest amount of variance (7%, $p < 0.001$). Table 3 shows that of the facilitators, only motivation is significantly related towards OCB organisation: this is for both autonomous motivation ($\beta = 0.30, p < 0.001$) and controlled motivation ($\beta = -0.16, p < 0.05$). From the R^2 change figures in Step 2, we can see that facilitators accounted for a moderate amount of variance (11%, $p < 0.001$). All three needs dimensions (autonomy, competence and relatedness) are also significant predictors: autonomy ($\beta = 0.24, p < 0.01$), competence ($\beta = 0.13, p < 0.1$) and relatedness ($\beta = 0.19, p < 0.01$). The R^2 change (Step 3) shows that the three needs dimensions also account for a moderate amount of variance (11%, $p < 0.001$). In Step 4, PAS is also shown to be a significant predictor ($\beta = 0.37, p < 0.001$) and accounts for a moderate amount of variance (11%, $p < 0.001$).

Overall, there is partial support for Hypothesis 1 and 7 and strong support for Hypotheses 4, 5, 6, 8 and 9.

Table 1. Descriptive statistics and correlations.

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	37.4	13.1	-													
2. Education	2.3	1.0	0.09	-												
3. Firm size	1.6	0.90	0.02	0.08	-											
4. Intrinsic aspirations	4.1	0.60	-0.01	-0.03	-0.09	-										
5. Extrinsic aspirations	2.6	0.77	-0.36	-0.07	0.01	0.03	-									
6. Mindfulness	3.8	0.66	0.39	0.00	0.03	0.11	-0.41	-								
7. Autonomous motivations	21.2	4.8	0.19	0.03	0.03	0.26	0.01	0.12	-							
8. Controlled motivations	15.8	4.0	-0.17	-0.02	0.02	-0.09	0.42	-0.46	0.09	-						
9. Autonomy	3.6	0.58	0.32	-0.04	-0.09	0.13	-0.20	0.41	0.30	-0.40	-					
10. Competence	3.9	0.64	0.31	-0.10	0.03	0.32	-0.29	0.48	0.32	-0.40	0.61	-				
11. Relatedness	3.9	0.60	0.15	-0.12	-0.10	0.43	-0.11	0.32	0.24	-0.31	0.48	0.56	-			
12. PAS	3.7	0.82	0.12	-0.01	0.01	0.15	-0.14	0.23	0.23	-0.25	0.38	0.36	0.32	-		
13. OCB individual	3.5	0.72	-0.02	-0.02	-0.09	0.27	-0.01	0.07	0.17	-0.10	0.20	0.24	0.31	0.29	-	
14. OCB organisation	3.8	0.78	0.15	0.02	-0.07	0.18	0.05	0.13	0.34	-0.08	0.32	0.34	0.27	0.39	0.52	-

Notes: N = 386. Values over 0.11 are $p < 0.05$, and values over 0.14 are $p < 0.01$.

Table 2. Hierarchical moderated regression analysis for OCBs individual.

Variables	Models with OCBs individual				
	Step 1 controls	Step 2 facilitators	Step 3 satisfaction	Step 4 moderator	Step 5 interactions
Age	0.02	0.02	-0.01	0.00	0.00
Gender	0.07	0.02	0.00	0.01	0.02
Education	-0.04	-0.02	0.02	0.02	0.03
Private sector	-0.13	-0.13	-0.15*	-0.17**	-0.17*
Firm size	-0.06	-0.07	-0.08	-0.08	-0.08
Intrinsic aspirations		0.10 [†]	0.04	0.04	0.06
Extrinsic aspirations		0.12	0.10	0.10	0.11 [†]
Mindfulness		0.02	-0.06	-0.07	-0.08
Autonomous motivations		0.12*	0.02	-0.03	-0.05
Controlled motivations		-0.12 [†]	0.02	0.07	0.06
Needs satisfaction autonomy			0.18*	0.15*	0.21**
Needs satisfaction competence			0.10	0.06	0.04
Needs satisfaction relatedness			0.12 [†]	0.09	0.05
Perceived autonomous support (PAS)				0.29***	0.30***
Intrinsic aspirations × PAS					-0.14*
Extrinsic aspirations × PAS					0.18**
Mindfulness × PAS					0.10
Autonomous motivations × PAS					0.13*
Controlled motivations × PAS					-0.16*
Needs satisfaction autonomy × PAS					-0.19*
Needs satisfaction competence × PAS					-0.05
Needs satisfaction relatedness × PAS					0.09
R ² change	0.03	0.05*	0.06**	0.07***	0.05 [†]
Total R ²	0.03	0.08	0.13	0.20	0.25
Total adjusted R ²	0.01	0.04	0.09	0.15	0.18
Total F statistic	1.559	2.003*	2.737**	4.111***	3.335***

Notes: Standardised regression coefficients. All significance tests were single-tailed. [†] $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table 3. Hierarchical moderated regression analysis for OCB organisation.

Variables	Models with OCBs organisation				
	Step 1 controls	Step 2 facilitators	Step 3 satisfaction	Step 4 moderator	Step 5 interactions
Age	0.11	0.07	0.02	0.04	0.03
Gender	-0.11	-0.15*	-0.17**	-0.15*	-0.16**
Education	-0.01	0.01	0.06	0.06	0.05
Private sector	-0.06	-0.05	-0.07	-0.10	-0.07
Firm size	-0.02	-0.04	-0.04	-0.05	-0.06
Intrinsic aspirations		0.04	-0.06	-0.06	-0.06
Extrinsic aspirations		0.09	0.07	0.07	0.05
Mindfulness		-0.02	-0.11	-0.12	-0.14
Autonomous motivations		0.30***	0.16**	0.10 [†]	0.12*
Controlled motivations		-0.16*	0.03	0.10	0.04
Needs satisfaction autonomy			0.24**	0.21**	0.22**
Needs satisfaction competence			0.13 [†]	0.07	0.04
Needs satisfaction relatedness			0.19**	0.14*	0.14*
Perceived autonomous support (PAS)				0.37***	0.36***
Intrinsic aspirations × PAS					-0.07
Extrinsic aspirations × PAS					0.02
Mindfulness × PAS					0.06
Autonomous motivations × PAS					-0.09
Controlled motivations × PAS					0.06
Needs satisfaction autonomy × PAS					0.08
Needs satisfaction competence × PAS					-0.04
Needs satisfaction relatedness × PAS					0.15*
R^2 change	0.03	0.11***	0.11***	0.11***	0.03
Total R^2	0.03	0.13	0.24	0.35	0.37
Total adjusted R^2	0.01	0.10	0.20	0.31	0.31
Total F -statistic	1.349	3.665***	5.776***	8.900***	6.088***

Notes: Standardised regression coefficients. All significance tests were single-tailed. [†] $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Interactions

Tables 2 and 3 show a number of significant interactions, with PAS interacting significantly with five of the SDT dimensions towards OCB individual: intrinsic aspirations ($\beta = -0.14, p < 0.05$), extrinsic aspirations ($\beta = 0.18, p < 0.01$), autonomous motivation ($\beta = 0.13, p < 0.05$), controlled motivation ($\beta = -0.16, p < 0.05$) and needs satisfaction autonomy ($\beta = -0.19, p < 0.05$). From Step 5, we can see that the interactions accounted for an additional 5% ($p < 0.1$) variance. Towards OCB organisation, only one interaction was significant, and this was between PAS and needs satisfaction relatedness ($\beta = 0.15, p < 0.05$). From Step 5, we can see the interactions accounted for an additional 3% (nonsignificant) variance.

To facilitate interpretations of the significant moderator effects, the interactions are presented in Figures 1–6.

Overall, the plots of the interactions all show similar findings, with respondents with high levels of PAS reporting the highest levels of OCBs towards both individual and organisation dimensions compared to respondents reporting low levels of PAS. PAS enhanced the positive influences of some SDT dimensions (specifically Figures 3, 5 and 6), which means that managers were able to lever their own autonomous motivations and needs satisfactions to achieve greater OCBs with higher PAS. Furthermore, PAS buffered the reduction in OCBs through controlled motivation (Figure 4). Two unusual findings were that PAS enhanced the OCBs (a positive effect) of a theoretically detrimental SDT dimension, extrinsic aspirations (Figure 2), which indicates that PAS was able to ‘override’ this detrimental influence and create enhancement effects. Finally, while respondents with high intrinsic aspirations (Figure 1) tended towards a slight reduction in OCBs, for those who also had high PAS, the overall level of OCBs was still greater than those with high intrinsic aspirations and low PAS, which ultimately still supports our assertions. Overall, there is strong support for Hypothesis 10.

In summary, the regression models were significant and sizeable: OCB individual ($R^2 = 0.25, F = 3.335, p < 0.001$) and OCB organisation ($R^2 = 0.37, F = 6.088, p < 0.001$). Finally, the variance inflation factors (VIF) were examined for evidence of multi-collinearity, which is evident at VIF scores of 10 or higher (Ryan 1997). The scores from the present study were all below 3.0, indicating no evidence of multi-collinearity unduly influencing the regression estimates.

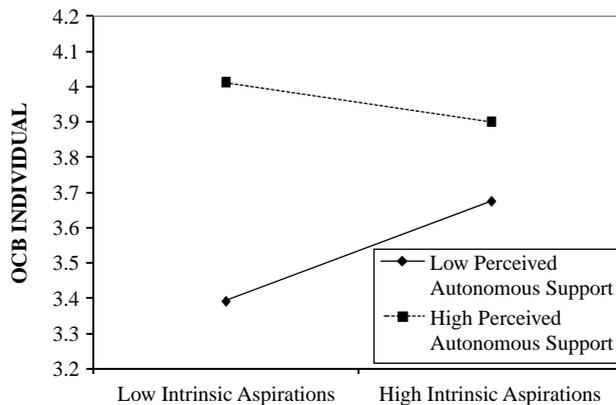


Figure 1. Interaction between intrinsic aspirations and PAS to OCB individual.

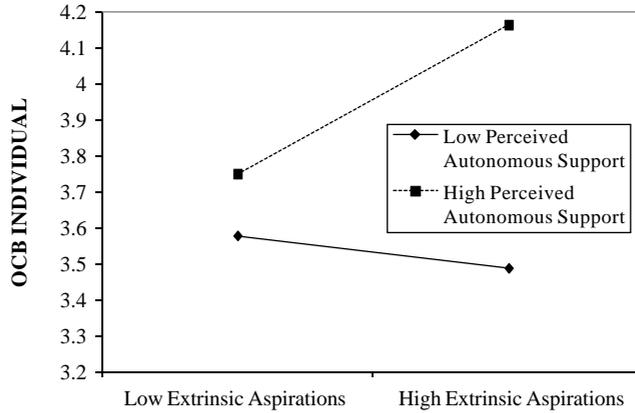


Figure 2. Interaction between extrinsic aspirations and PAS to OCB individual.

Discussion

The present study is one of the few studies to test the full SDT metamodel, which incorporates three facilitators (aspirations, motivations and mindfulness), three needs (autonomy, competence and relatedness) and PAS. Overall, the SDT dimensions were significantly correlated with OCBs, except for the ‘negative’ dimensions of extrinsic aspirations and controlled motivation. This study highlights the importance of testing the wide range of SDT predictors towards OCBs, and provides support for the testing of SDT beyond single dimension studies (e.g. motivation or three needs). The regression analysis showed that of the three facilitators, autonomous and controlled motivations were consistent predictors of OCBs. Employees with higher autonomous motivations were more likely to engage in OCBs (individual and organisation), while employees with higher controlled motivations were less likely to engage in OCBs.

There was much stronger support for the three needs, with needs of autonomy and relatedness being significant predictors of both OCB dimensions, while competence was linked with OCB organisation only. From the amount of variance accounted for, we can also see that the three needs dimensions were stronger at predicting OCBs than the

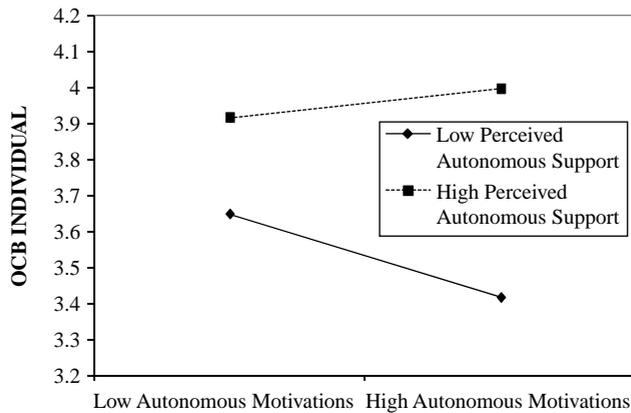


Figure 3. Interaction between autonomous motivation and PAS to OCB individual.

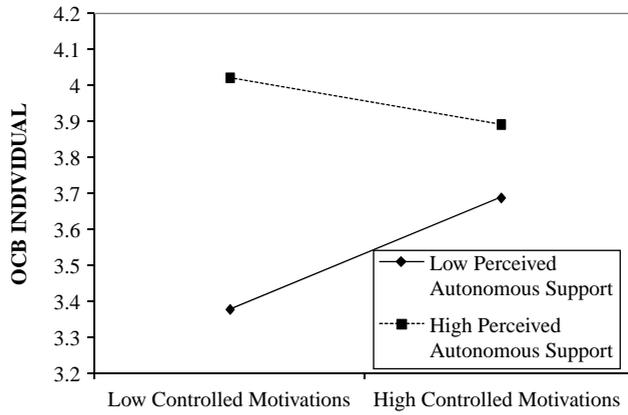


Figure 4. Interaction between controlled motivation and PAS to OCB individual.

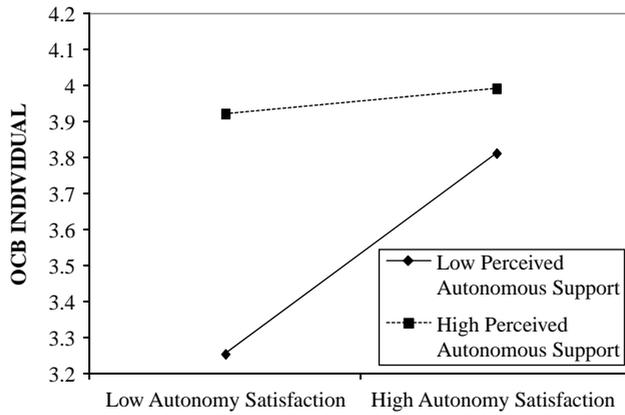


Figure 5. Interaction between autonomy satisfaction and PAS to OCB individual.

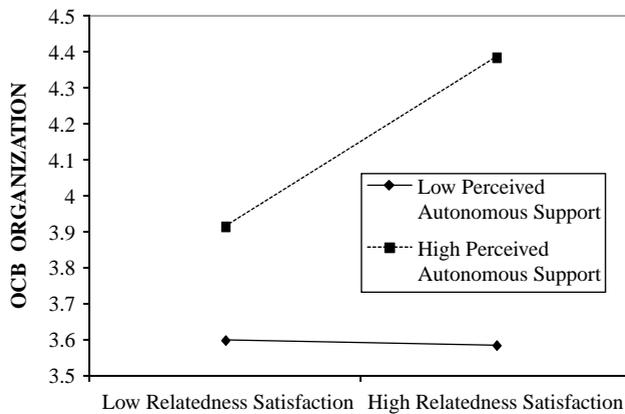


Figure 6. Interaction between relatedness satisfaction and PAS to OCB organisation.

facilitators, albeit only slightly. However, by comparing the influence of facilitators to OCBs from Steps 2 and 3, there is evidence of mediation, with the three needs fully mediating the influence of facilitators to OCB individual, and partially mediating facilitators to OCB organisation. This aligns with the SDT theory that asserts that facilitators enhance the three needs, which, in turn, influences outcomes.

There is also strong support for the direct effects of PAS on OCBs. We argued that stronger PAS would result in employees reciprocating through higher OCBs and this was supported. Indeed, PAS directly influenced OCBs at similar levels, equal to the influence of either the facilitator or three needs dimensions towards both OCB dimensions. This finding highlights the strength of PAS towards enhancing employee OCBs and also highlights the importance of considering the context of the situation when exploring SDT dimensions in the workplace, as PAS moderated the effects on the other SDT dimensions towards OCBs. Universally, the moderating effects of PAS on the SDT dimensions showed that the highest levels of OCBs were reported by employees with high PAS. Thus, PAS enhances the ability of employees to leverage the beneficial SDT dimensions to facilitate greater involvement in OCBs. Theoretically, this provides support for testing PAS as a moderator of other SDT dimensions, as we found this influence occurred across a number of these dimensions.

Limitations

One limitation of the present study was the use of self-reported cross sectional data, so future studies might seek to gather OCB data from other sources such as supervisors. However, the methodology used saw us collect data at two different times, (1) predictors and (2) outcomes, thus minimising concerns towards common method variance (CMV). Furthermore, the testing of interaction effects is not as susceptible to CMV (Evans 1985) further enhancing our confidence in the data. There were measurement reliability issues with the three needs dimensions of autonomy and competence, although such variation appears standard for this particular measure (e.g. Greguras and Diefendorff 2009), suggesting the issue may relate to the measure itself. Furthermore, while the study focuses on supervisors and managers, which clearly limits generalising findings to all employees, the wide number of organisations sampled (250), the large number of supervisors and managers ($N = 386$) and the diverse spread of education levels, ethnicity (with over 37% non-White) and industry sector mitigate this limitation. Overall, our wide sample of organisations and supervisors and managers enhances the ability to generalise these findings, at least for supervisors and managers.

Future research and implications

Future research might seek to explore outcomes beyond self-reported measures, such as performance, absenteeism and turnover. Future research should seek to test these effects on employees at all levels of an organisation, including low skilled employees and CEOs. Given the lack of some SDT dimensions towards OCBs (e.g. mindfulness), a wider range of job and mental health outcomes should also be tested. For example, the full metamodel of SDT may enhance work engagement and job satisfaction. Furthermore, as there is only limited SDT literature set within the workplace and given the importance of global motivations in research to date, the testing of additional organisations (such as not-for-profit and entrepreneurial/small business organisations) may provide differing outcomes because of different employee motivations.

The implications for human resource management are multifaceted. While the complexities and difficulties of managers' roles are dichotomous and complex, for example being responsible for task and performance requirements whilst simultaneously being required to engage in support roles (McGovern, Gratton, Hope-Hailey, Stiles and Truss 1997) our findings, overall, suggest that the support and development of well-being is fundamental to positive organisational outcomes.

The central role of PAS, and in particular PAS's strong direct effects and strong moderating effects, highlights the importance of supporting autonomy in the workplace. Simply, those who feel that their autonomy is supported by their organisations will likely outperform those who perceived less autonomous support. Consequently, management development and training that aids in the ability of managers to enhance PAS, is imperative to achieving high performance. Managers, who provide their workers with choice, give non-controlling feedback and who understand and engage with their employees, are likely to receive greater job performance (OCBs) from employees. The perceptions of autonomy support that managers create are central to positive organisational outcomes. Therefore, using strategies outlined earlier by Deci et al. (1989) as a mechanism for enhancing OCBs, firms may look to provide manager training in autonomous support. Furthermore, using coaching strategies for management, which emphasise the value of various types and outcomes of autonomy for various employee levels and how to manage that process through support and relationship building, is likely to garner greater outcomes for the organisation (see Caza 2012).

Similarly, the importance of the three needs was fundamental to the study's positive findings. Thus, placing human well-being at the core of good business and HR practice is important. In the current recession, greater cost control measures, rather than support behaviours may be deemed the most expedient method of achieving organisational success, however, our findings encourage HR and managers to seek, identify and emphasise to employees, the positive and *personal* benefits in experiencing the three needs at work. That is, our findings suggest that enhancing employees' own well-being is the first step in developing the links between individual well-being and positive workplace outcomes. Fostering employees' positive experiences of autonomy, competence and relatedness could begin with training designed to help recognise when one is engaged in one of these three needs. Employees benefit, directly and personally, from having autonomy, from feeling challenged in terms of their competence and from engaging in meaningful relationships with co-workers (Deci and Ryan 2000). This study extended these personal benefits towards the organisational benefits derived from OCBs. Enabling the experience of the three needs at work begins with the recognition, at a personal level, of their advantage. We suggest that training and development within this area, such as programmes that include journal or diary keeping, may help highlight the three needs experiences for employees, thus reinforcing their value. Building these experiences into job design and future motivational packages may assist in highlighting their on-going importance, not only for the individual but also for enhanced organisational outcomes.

Conclusion

The present study finds that the metamodel of SDT generally influences OCBs as expected, and that PAS can have additional benefits through its own direct effects and also through enhancing the direct effects of the other SDT dimensions. In particular, the consistent moderating effects of PAS further highlight this potential benefit: managers with high PAS ratings consistently reporting higher OCBs than managers with low PAS

ratings. The findings also highlighted how the three needs (autonomy, competence and relatedness) mediate the influence of the SDT facilitator dimensions (aspirations, motivations and mindfulness), which aligns well with SDT theory. This finding was particularly apparent towards OCB individual. Overall, the metamodel approach, where all five SDT dimensions were considered, shows great value in enhanced model strength, as well as highlight the moderating effects of PAS in the workplace, a context which has seldom been explored in the literature.

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