

Emotional strain and organizational citizenship behaviours: A meta-analysis and review

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Abstract

This paper provides a qualitative review and quantitative summary of the relationship between emotional strain and organizational citizenship behaviour (OCB), and discusses five potential moderators of the strain-OCB relationship. OCB refers to discretionary behaviours that benefit organizations and their members. Emotional strain is important to consider because it has a broad impact on employee behaviours and is possibly more fundamental than other forms of strain. However, it has received less attention than aspects of job-related strain, such as job dissatisfaction. Based on the results of 29 empirical studies with 52 unique effect sizes, meta-analytic results revealed a negative relationship between strain and OCB (corrected estimate of the population correlation coefficient, $\rho = -.16$). Furthermore, this relationship is moderated by the type of OCB (OCB directed at the organization vs. that directed at individuals), type of organization (private vs. public), publication status (published vs. unpublished), OCB rating source (self vs. other), and type of sample (full-time employees vs. employed students). We present theoretical and practical implications of these findings, including steps that could be taken by organizations to increase OCB and to reduce emotional strain, and suggest directions for future research.

Keywords: *Emotional strain, organizational citizenship behaviour, job performance, stress, meta-analysis*

Introduction

An important dimension of performance in work organizations encompasses behaviours that are contextual in nature (Borman & Motowidlo, 1997), which are collectively known as organizational citizenship behaviour (OCB; Organ, 1997). OCBs are discretionary behaviours that benefit organizations and their members by improving the social and psychological context in which the technical core of the organization operates. Such behaviour is important at multiple levels. For example, OCBs are beneficial for individuals because employees who perform them tend to receive more favourable performance evaluations and rewards (Allen & Rush, 1998; Van Scotter, Motowidlo, & Cross, 2000). OCBs also contribute to organization-level performance and social capital because they

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An abbreviated version of this paper was presented at the 22nd Annual Conference of the Society for Industrial and Organizational Psychology, April 2007, New York City, NY, USA.

ISSN 0267-8373 print/ISSN 1464-5335 online © 2007 Taylor & Francis
DOI: 10.1080/02678370701758124

help companies to attract and retain high-performing employees, enhance interpersonal cohesion and coordination, and aid adaptability (Bolino, Turnley, & Bloodgood, 2002; Podsakoff, Ahearne, & MacKenzie, 1997). In fact, Podsakoff, MacKenzie, Paine, and Bachrach (2000) noted that up to 25% of the variance in companies' financial indicators (e.g., revenue, operating efficiency) is accounted for by OCB.

Because of the benefits of performing OCB, much research has examined its antecedents. Some commonly-studied predictors include employee morale (e.g., satisfaction and commitment), personality, mood and emotion, perceptions of fairness, and leader behaviours (Borman, Penner, Allen, & Motowidlo, 2001; Cohen-Charash & Spector, 2001; LePine, Erez, & Johnson, 2002; Meyer, Stanley, Herscovitch, & Topolnysky, 2002; Organ & Ryan, 1995; Spector & Fox, 2002). Although many individual and environmental characteristics that foster OCB have been examined, relatively less attention has been paid to variables concerning occupational health and stress. Health and stress are important topics within the organizational sciences, yet researchers have tended to focus on the antecedents of stress (or *stressors*) rather than its consequences (or *strains*). Strains are harmful and maladaptive reactions towards stressors (Jex, 1998), and several researchers (e.g., Jackson & Schuler, 1985; Podsakoff, LePine, & LePine, 2007; Spector, 1986) have documented the effects that various stressors (e.g., role ambiguity, lack of perceived control) have on employee strain. Yet this approach begs the following question: What happens when employees experience strain?

Fortunately, some research exists that directly addresses the consequences of strain. A meta-analysis by LePine, Podsakoff, and LePine (2005) showed that while different stressors have unique effects on employee motivation, they consistently resulted in strain which, in turn, hurt job performance. However, in this study, the authors restricted their focus to task performance, which is the performance of the core duties and responsibilities associated with one's job. Because task performance is not the same as OCB (Borman & Motowidlo, 1997), the relationship that strain shares with the latter is unclear.

The purpose of the current study is to provide a quantitative review of empirical studies relating strain to OCB. We examined two types of OCB: behaviours directed at specific individuals (OCBI; e.g., staying late to help a co-worker complete an assignment) versus those directed at the organization (OCBO; e.g., voluntarily refilling the paper tray in a photocopier; see Williams & Anderson, 1991). Categorizing OCB based on its target captures meaningful differences (LePine et al., 2002) while remaining flexible enough to incorporate alternative dimensions proposed by other scholars (e.g., Organ, 1988; Van Scotter & Motowidlo, 1996). Examining the strain-OCB relationship is important because researchers have argued that it is important to expand and clarify the relationships between occupational stress and other important outcome variables, such as employee performance and job attitudes (e.g., Beehr, Jex, Stacy, & Murray, 2000; Jex, 1998; Quick, 1999). Currently, organizations are reluctant to invest in programmes aimed at helping employees manage stress until there is consistent evidence confirming that strain impedes employee performance (Jex, 1998).

In the following sections, we provide a brief overview of the strain literature and discuss five potential moderators of strain-OCB relationships. There are (a) type of OCB (OCBI vs. OCBO), (b) type of organization (public vs. private), (c) publication status (published vs. unpublished), (d) type of sample (employee vs. employed students), and (e) rating source (self- vs. other-rated OCB).

Employee strain

Strain represents individuals' adverse responses to environmental demands or stressors (Beehr et al., 2000; Jex, 1998). There are three general categories of strain: emotion-, physiological-, and job-related strain (Bhagat, Allie, & Ford, 1995; Cartwright & Cooper, 1997; Kahn & Byosiere, 1992). *Emotion-related strains* are negative emotions and emotional responses that are produced by stressors, such as anger, frustration, anxiety, emotional exhaustion, and depression. *Physiological-related strains* are illnesses and problems with cardiovascular, biochemical, gastrointestinal, and musculoskeletal functioning. Last, *job-related strains* are negative work-based responses to stressors, such as low satisfaction, commitment, motivation, and high withdrawal (e.g., absenteeism, turnover). All of these strains have consequences for employees (e.g., health problems, work-family conflict) and organizations (e.g., low productivity, high turnover; Cartwright & Cooper, 1997; Kahn & Byosiere, 1992; Warr, 1999).

Although all three forms of strain are important, we focused on emotion-related strain for two reasons. First, there is an abundance of research linking job-related strain (e.g., reduced satisfaction and commitment) to OCB. For example, Organ and Ryan (1995) reviewed the antecedents of OCB and concluded that satisfaction was one of the strongest predictors. Similar conclusions were reached by others (e.g., Podsakoff, MacKenzie, & Bommer, 1996; Hoffman, Blair, Merizc, & Woehr, 2007; LePine et al., 2002). As such, another review of job-related strain contributes little incremental knowledge for understanding OCB. Instead, more can be learned by examining the effects of the other two types of strain. Unfortunately, the authors were only able to locate two published studies that examine relationships between physiological-related strains and OCB (Cartwright & Cooper, 1997; Schaubroeck & Fink, 1998). Thus, dependable qualitative and quantitative reviews of these relationships were not possible. Although the relationship appears to be negative, further work is necessary before any general conclusions about physiological-related strains and OCB can be reasonably made.

Our second reason for examining emotion-related strain is that emotional responses are the most fundamental form of human information processing (e.g., Cosmides & Tooby, 2000; Lord & Harvey, 2002). Emotional processing serves as a first-response system for interactions with the external environment because it coordinates and activates different physiological, cognitive, and behavioural responses in order to aid adaptation to ongoing changes. Thus, emotional strain may be the most basic form of strain, possibly occurring before and eliciting other forms of strain. Indeed, preliminary evidence suggests that emotional strains cause job-related strains (e.g., job dissatisfaction; Fuller, Stanton, Fisher, Spitzmuller, Russell, & Smith, 2003; Rosen, Chang, & Johnson, 2006; Stamper & Johlke, 2003) and physiological strains (Melamed, Ugarten, Shirom, Kahana, Lerman, & Froom, 1999; Siegrist, 1996; Smith, Roman, Dollard, Winefield, & Siegrist, 2005; Stearns & Moore, 1993). Given that emotional strain may precede other forms of strain, much can be gained by understanding its relationship with OCB.

Emotional strain and OCB

Several conceptual frameworks (e.g., Freudenberger, 1983; Lee & Ashforth, 1993, 1996; Shirom, 1989) have been proposed to explain the effects of emotional strain. However, many of these frameworks are restricted to non-work contexts and, thus, are inadequate for describing relationships between strain and organizationally-relevant outcomes such as task performance and OCB (e.g., Cropanzano, Rupp, & Byrne, 2003; Wright & Bonett, 1997).

Despite this limitation, we suspect strain is related to OCB for several reasons. First, social exchange theory (Cropanzano et al., 2003), effort–reward imbalance theory (Siegrist, 1996), and resource allocation theory (Kanfer & Ackerman, 1989) all propose that high levels of strain lead to low levels of OCB, albeit for different reasons. Second, ample evidence suggests that employees’ global assessments of their job and work environment, such as satisfaction (LePine et al., 2002) and justice (Cohen-Charash & Spector, 2001), influence the performance of OCB. Given that strain is a reaction to one’s work environment (viz., an appraisal of the balance between environmental demands and personal coping resources; Beehr et al., 2000; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Jex, 1998; Karasek, 1990), strain may also impact on OCB. Finally, OCBs are discretionary behaviours in many jobs and may not be formally recognized and rewarded (Borman & Motowidlo, 1997; Organ, 1997). For this reason, when strain becomes excessive and stretches available resources, employees respond by reducing OCB rather than allowing task performance to suffer. Employees do so because lower OCB levels carry fewer negative consequences than lower task performance levels (Organ, 1997). Empirical findings support this logic because work-based perceptions and attitudes are stronger predictors of OCB than task performance (e.g., Motowidlo & Van Scotter, 1994; Organ & Ryan, 1995). Based on the reasoning above, we proposed the following:

Hypothesis 1: Employees’ emotional strain is negatively related to their performance of OCB.

Moderators of the strain-OCB relationship

Type of OCB. It is likely that relationships between emotional strain and OCB vary across OCBI and OCBO. Specifically, we expect that strain will have a stronger relationship with OCBO than OCBI for two reasons. First, there is correspondence between the source of strain and the target of OCBO (i.e., the organization). Because employees tend to experience emotional strain when organizational demands exceed their coping resources, they may be inclined to attribute strain to the organization rather than specific members (Demerouti et al., 2001; Siegrist, 1996). If so, then employees will reciprocate by reducing the performance of behaviours that benefit the organization (i.e., OCBO). Conversely, OCBI should be less affected when the source of strain is attributed to organizations. This target correspondence effect has been observed in the justice literature. For example, interactional justice, which often derives from judgments about one’s supervisor, tends to predict supervisor-referenced consequences (e.g., trust in supervisor), whereas procedural justice, which results from judgments about company practices, influences system-referenced outcomes (e.g., organizational commitment; Masterson, Lewis, Goldman, & Taylor, 2000). We expect similar congruence-based effects for strain-OCBO relationships.

Second, employees often perform OCBI as a means to build social capital within organizations (Bolino et al., 2002). That is, performing OCBI strengthens and expands employees’ network ties with other organizational members. In cases where situational demands exceed coping ability, employees can “withdraw” social capital by seeking assistance from others. Thus, OCBI represents one way for employees to bolster their support systems and coping resource repertoire (Halbesleben & Bowler, 2005, 2007), which are particularly useful when strain is overwhelming. As a result, OCBI may not fluctuate as much as OCBO as a function of strain.

Hypothesis 2: Emotional strain has a stronger relationship with OCBO than OCBI.

Type of organization. We also investigated whether the type of organization (public vs. private) moderates the relationship between strain and OCB. Although OCBs are considered more discretionary and less part of formal job descriptions (Organ, 1997), studies have shown that they contribute to supervisors' performance appraisal ratings of employees and may sometimes be linked to formal rewards and promotions (e.g., Allen & Rush, 1998; Podsakoff et al., 2000; Van Scotter et al., 2000). Thus, in some cases, OCB may be viewed as a part of formal exchange relationships between employees and organizations. However, the way in which OCBs are viewed may differ between public and private organizations. Because public organizations tend to have more bureaucratic compensation structures (e.g., tenure-based pay; Bass, 1985), OCBs are less likely to be formally recognized and rewarded in such organizations. Indeed, studies have shown that performance-based pay systems are less viable in public sectors (Kellough & Lu, 1993) and performance-based monetary rewards and incentives are deemed less important for public sector employees (Wittmer, 1991). Additionally, based on the National Organizations Study conducted in the USA between 1996 and 1997, significantly fewer public sector organizations had merit and performance-based pay programmes than private sector ones (Kalleberg, Marsden, Reynolds, & Knoke, 2006). Because of the weaker link between performance and formal rewards, OCBs may be viewed as more discretionary by public sector employees. Thus, for these employees, we expect that there will be greater covariance between levels of OCB and emotional strain.

In contrast, private organizations are more likely to have performance-based reward structures and ones that recognize extra-role performance (Gore, 1993; Osborne & Gaebler, 1993), which therefore blurs distinctions between task performance and OCB. As such, the potential payoff for performing OCB (or the incurred loss for not performing them) is high for employees who work in private organizations. Even when emotional strain is high, employees may still engage in OCB because they are considered part of their prescribed role. Thus, we expect that there will be less fluctuation in the performance of OCB as a function of strain for employees who work in private organizations versus their counterparts in public ones.

Hypothesis 3: The relationship between emotional strain and OCB is stronger for employees in public organizations than those in private organizations.

Publication status. Meta-analyses are often criticized for "file-drawer" problems due to the assertion that only significant or especially strong effects are published (Rosenthal, 1979). To test this bias, we included publication status as a moderator. We expect that relationships between emotional strain and OCB are stronger in published studies relative to unpublished ones.

Hypothesis 4: The relationship between emotional strain and OCB is stronger for published studies than unpublished studies.

Rating source. To accurately estimate the relationship between strain and OCB, it is necessary to have valid and accurate measures of both constructs. Because emotional strain represents employees' personal responses to situational demands, it is appropriate to measure it using self-report techniques (Frese & Zapf, 1988; Kompier, 2005). However, it is debatable whether employees are able to reliably and accurately self-report their

performance (Atwater, Ostroff, Yammarino, & Fleenor, 1998; Fletcher & Baldry, 1999). In support of this idea, studies have shown that large self–other discrepancies exist for OCB ratings (e.g., Allen, Barnard, Rush, & Russell, 2000). One possible explanation for this finding may be that self-ratings of performance contain more bias than other-rated performance (Taris, 2006). It is also possible that common source variance (e.g., Binning, Zaba, & Whattam, 1986; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) artificially inflates relationships between strain and self-rated OCB.

Other researchers have taken a different stance. They argue that when measurement tools are well-designed and have good psychometric properties, self-reported data is equally valuable as ratings from other sources or more objective measures of performance (e.g., Sackett, Berry, Wiemann, & Laczko, 2006; Spector & Fox, 2002). In fact, there may be times when collecting self-reports of OCB is appropriate, such as when OCBs are directed at targets other than the individuals providing the ratings (Dalal, 2005; Sackett et al., 2006). In these cases, self-ratings provide accurate estimates of employees' OCB. Thus, observing high correlations between strain and self-rated OCB may reflect true variance rather than bias owing to a method factor.

Because of these opposing views, we examined whether differences exist between strain-OCB relationships when OCB is assessed using self- versus other-ratings. Meta-analysis allows us to correct for statistical artefacts, such as measurement unreliability, that potentially impact the magnitudes of correlation estimates. Thus, our estimates of strain-OCB relationships are more reflective of population effect sizes.

Research Question 1: Is there a difference in the strength of the relationship between emotional strain and OCB when the latter variable is measured using self-ratings versus other-ratings?

Type of sample. A controversial issue in organizational sciences is whether employed students are equivalent to full-time employees and whether effects associated with the former generalize to the latter. It is possible that strain-OCB relationships are weaker for full-time employees because they are more invested in their organization and have long-term expectations (e.g., promotion, retirement benefits) concerning their employment (Curtis & Williams, 2002). Because of this long-term focus, they may expend more effort developing social networks within organizations. One way of doing so is through the performance of OCB (Bolino et al., 2002). Even when strain is high, full-time employees may continue to perform OCBs because they lead to social support and possibly organizational rewards. Paralleling this reasoning, it has been shown that emotionally exhausted employees perform OCBI as a way to seek social support (Halbesleben & Bowler, 2005, 2007). Thus, a ceiling effect may exist for full-time employees because of their propensity to perform OCB irrespective of experienced strain, which would attenuate strain-OCB relationships.

Conversely, strain-OCB relationships may be weaker for employed students because of a floor effect. Because they tend to be more economically focused and perceive the employment relationships as being short-term (Curtis & Williams, 2002), employed students may be less likely to exert extra effort to perform OCB in the first place. If long-term social support is not valued, then engaging in OCB does not yield much return. In addition, employed students may have greater flexibility in responding to strain. For example, when faced with high emotional strain, students may simply terminate the employment relationship and seek employment elsewhere. Overall, there may be less variability in the frequency that employed students perform OCB which, consequently, would serve to attenuate strain-OCB relationships.

The third possibility is that the employment relationships that develop between employed students and their employers are just as meaningful and important as those between full-time employees and their organizations. For example, Gordon, Slade, and Schmitt (1987) have suggested that organizational research based on data collected from student samples can show high external validity and be generalizable to other populations. This may be especially true for student samples from urban universities, which tend to have a student body comprised of non-traditional, working adult students who are employed full-time in relatively permanent jobs. If so, then there may be little difference between “employee” and “student” samples, as both represent the employed adult population. Thus, strain-OCB relationships ought to be equivalent across the two groups. Because of these competing perspectives, we explored whether the magnitude of strain-OCB relationships is moderated by sample type.

Research Question 2: Is there a difference in the strength of the relationship between emotional strain and OCB when data is collected from employed students versus full-time employees?

Method

Literature search

Several methods were used to search for studies with usable data. First, we conducted a computerized search of two databases, PsycINFO and Academic Search Premier, for empirical studies to include in the meta-analysis. No specific time span restriction was imposed as we wanted to cast a wide net to find as many studies as possible. Keywords associated with emotional strain (e.g., anger, anxiety, burnout, depression, emotional exhaustion, pressure, strain, stress, tension) were combined with keywords associated with OCB (e.g., OCB, OCBI, OCBO, altruism, civic virtue, compliance, conscientiousness, contextual performance, courtesy, helping, interpersonal facilitation, prosocial behaviour, sportsmanship) for inclusion in the database search. Second, we manually searched the journals *Work & Stress*, *Journal of Occupational Health Psychology*, *Journal of Applied Psychology*, *Personnel Psychology*, and *Academy of Management Journal* for relevant empirical studies. These particular journals were chosen because they represent topical journals that we suspected were most likely to publish empirical studies that examined relationships between emotional strain and OCB.

In addition, we also posted calls for unpublished papers on multiple discussion lists, including those for the Society for Industrial/Organizational Psychology, and the Organizational Behavior, Human Resource, and Research Methods Divisions of the Academy of Management. In total, we identified 29 candidate studies. There were 21 studies with 24 distinct samples that examined strain and OCBI, 18 studies with 22 distinct samples that examined strain and OCBO, and 4 studies with 6 distinct samples that examined strain and broadly-defined OCB. Because 14 studies with 17 samples included both strain-OCBI and strain-OCBO relationships, we extracted effect sizes of both relationships from these samples.

Inclusion criteria and coding

Empirical studies were included in the meta-analysis if they fit the following three criteria. First, studies that investigated relationships between strain and OCBI, OCBO, or general

OCB were included. When studies employed other definitions or measures of OCB, such as Organ's (1988) five-dimension OCB measure, they were categorized into OCBI or OCBO based on Williams and Anderson's (1991) recommendations. Second, we only included studies that measured participants' experienced emotional strain. For example, studies that examined role ambiguity and role conflict (job stressors) were not included in our meta-analysis. As mentioned earlier, these variables are included in existing meta-analyses (e.g., Podsakoff et al., 2007). Third, correlation coefficients were collected as effect sizes. When a study reported multiple correlations, the decision of how to include multiple effect sizes was based on whether they were independent (Arthur, Bennett, & Huffcutt, 2001). Correlations were considered separate entries when they represented relationships between: (a) strain and separate outcome variables, or (b) strain and one dependent variable, but from different samples. Multiple effect sizes were aggregated and included in the analysis as one correlation if they represented correlations between strain and different measures of OCBI (e.g., altruism and courtesy) or OCBO (e.g., civic virtue and sportsmanship) collected from one source (Demerouti, Verbeke, & Bakker, 2005). These criteria resulted in 24 effect sizes for strain-OCBI, 22 for strain-OCBO, and 6 for strain-general OCB relationships.

Studies were also coded on the basis of sample characteristics (e.g., employee vs. student; public vs. private organization), OCB rating source (self-reported vs. other-reported OCBs), and publication status (published vs. unpublished papers). The first and the third authors conducted the coding independently and the agreement between the two authors was 97%. Minor discrepancies were resolved through discussion.

Procedure

The meta-analysis was conducted following the strategy specified by Arthur, Bennett, and Huffcutt (2001), which is based upon the recommendations of Hunter and Schmidt (1990). For each outcome variable, a sample-weighted mean correlation (\bar{r}) was first calculated. The percentage of variance accounted for by sampling error was computed (Hunter & Schmidt, 2004) to indicate the proportion of variance among correlations that is due to sampling error associated with sample sizes. The chi-square test for the homogeneity of observed correlation coefficients across studies was then calculated (Rosenthal, 1991). This homogeneity test helps determine how the standard error for effect sizes should be estimated. Depending on the test results, different formula were applied to calculate the standard error that would then be used to compute the 95% confidence interval around the sample-weighted mean correlation (Whitener, 1990). Information regarding the confidence interval was used to judge whether the relationships found between variables were significantly different from zero. If the 95% confidence interval excludes zero, then correlations are considered significant.

The statistical correction for attenuating artefacts such as unreliability of measures was then performed to derive the corrected estimate of the population correlation coefficient (ρ) (Hunter & Schmidt, 2004). We corrected for measurement unreliability for both the predictor (i.e., strain) and outcome variables (i.e., OCB) using the information from the empirical studies (i.e., internal consistency alphas; Hall & Brannick, 2002). The variance and standard deviation of the population estimate were then calculated to determine the 95% credibility interval. This credibility interval, built around the corrected population coefficient estimate, was viewed as one way to determine the presence of between-study moderators. If the credibility interval includes zero, it suggests that there may be between-study moderators, which create variance in effect sizes across studies (Arthur et al., 2001; Whitener, 1990). The Q statistic, which is based on a chi-square distribution, was

calculated to examine whether there is significant variation in the fully-corrected population estimate. The Q statistic provides an additional way to determine the impact of between-study moderators (a significant Q statistic indicates the presence of moderators). Taken together, when the credibility interval included zero and the Q statistic was significant, we performed subgroup analyses to examine the effects of a priori moderation effects (Cortina, 2003; Halbesleben, 2006; Hunter & Schmidt, 2004).

Results

Study characteristics

We first examined the demographic characteristics of the 35 samples that were included in the meta-analysis. The average age across the samples was 35.03 years (based on 27 samples). The average job tenure of participants across the samples was 7.56 years (based on 19 samples). Lastly, there was an even split for gender as 50% of the participants were male (based on 24 samples). In addition to demographic information, we also examined study design characteristics. A longitudinal design was employed for 4 samples, an experimental design was used for 2 samples, and the remaining 29 samples adopted a cross-sectional design.

Overall analysis

Table I presents the meta-analytic estimates of the relationships between emotional strain and OCB and its OCBI and OCBO dimensions. Included in the table are uncorrected and corrected estimates, confidence and credibility intervals, and Q statistics. After correcting for measurement unreliability, emotional strain had a significant, negative relationship with OCB ($\rho = -.16$). Sampling error and measurement unreliability accounted for 9.55% of the variance in effect sizes across studies. The 95% credibility interval included zero and the Q statistics was significant ($\chi^2_{(51)} = 585.36, p < .001$), which suggest the presence of between-study moderators. Thus, while our results provide support for Hypothesis 1, they also point to the need to test for moderators.

Table I. Meta-analytic results for bivariate relationships between emotional strain and overall OCB.

Variables and Moderators	k	N	\bar{r}	ρ	%SE	SD ρ	95% CI		95% CV		Q	t (df)
							Lower	Upper	Lower	Upper		
Overall	52	16025	-.13	-.16	8.63	.23	-.18	-.08	-.61	.25	585.36***	
<i>Type of OCB</i>												2.33* (44)
OCBI	24	7840	-.13	-.16	15.65	.15	-.19	-.07	-.46	.14	148.44***	
OCBO	22	5930	-.17	-.21	5.50	.31	-.28	-.07	-.82	.39	383.62***	

Note: OCBI = Organizational citizenship behaviour (individual); OCBO = organizational citizenship behaviour (organizational)

k = number of effect sizes; N = total participant number; \bar{r} = mean sample-weighted correlation; ρ = estimate of fully corrected population correlation; SD ρ = standard deviation of estimate of fully corrected population correlation; %SE = Percentage of observed variance accounted for by sampling error; 95% CI = 95% confidence interval around the mean sample-weighted correlation; 95% CV = 95% credibility interval around the corrected mean population correlation; Q = chi-square test for the homogeneity of true correlations across studies; t = significant test of the difference between the sample weighted correlations.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Type of OCB. Hypothesis 2 predicted that strain is more strongly related to OCBO than OCBI. As shown in Table I, strain had a significant, negative relationship with OCBI based on the sample-weighted mean correlation ($\bar{r} = -.13$). After correcting for sampling error and measurement unreliability, which accounted for 27.50% of the variance in effect sizes across studies, the population correlation estimate was $-.16$. The Q statistics was significant ($\chi^2_{(23)} = 148.44, p < .001$) and the credibility interval included zero, which indicate the presence of additional between-study moderators.

Strain also had a significant, negative sample-weighted mean correlation ($\bar{r} = -.17$) with OCBO. The sampling error and measurement unreliability accounted for only 5.54% of the variance in effect sizes across studies. After correcting for error, the population correlation estimate was $-.21$. The 95% credibility interval included zero and the Q statistics was significant ($\chi^2_{(21)} = 383.62, p < .001$), suggesting that between-study moderators were present. Further analyses revealed that the difference between the strain-OCBO and strain-OCBI relationships was significant ($t_{(44)} = 2.33, p < .05$). Thus, Hypothesis 2 was supported. Given that a large amount of variance remained unexplained for both relationships, hierarchical moderator analyses were conducted such that the remaining moderators were tested separately for OCBI and OCBO. These results are presented in Tables II and III.

Type of organization. Hypothesis 3 proposed that the strain-OCB relationship is stronger for employees in public organizations than for those in private organizations. Strain had a significant, negative relationship with OCBI for employees in public organizations ($\rho = -.25$), yet the relationship was also significant (albeit weaker) for employees in private organizations ($\rho = -.14$). Follow-up tests revealed that the relationship was significantly

Table II. Meta-analytic results for bivariate relationships between emotional strain and OCBI.

Moderators	k	N	\bar{r}	ρ	%SE	SD ρ	95% CI		95% CV		Q	t(df)
							Lower	Upper	Lower	Upper		
<i>Types of Organization</i>												
Public	10	4128	-.20	-.25	16.51	.13	-.28	-.13	-.50	.00	56.24***	2.16* (11)
Private	3	642	-.11	-.14	80.46	.04	-.19	-.04	-.22	-.06	3.67	
<i>Publication Status</i>												
Published	19	6168	-.15	-.19	14.49	.16	-.22	-.09	-.51	.13	124.58***	3.55*** (22)
Unpublished	5	1672	-.06	-.06	46.56	.07	-.06	-.05	-.20	.07	10.74*	
<i>Rating Source</i>												
Self	14	5880	-.17	-.21	22.28	.11	-.22	-.11	-.43	.02	62.84***	5.48*** (22)
Other	10	1960	-.02	-.03	18.13	.18	-.13	.08	-.38	.32	55.14***	
<i>Types of Sample</i>												
Employees	19	6515	-.15	-.19	14.97	.15	-.21	-.09	-.49	.11	120.99***	3.87** (22)
Students	5	1325	-.04	-.04	41.09	.09	-.12	.05	-.21	.13	12.17*	

Note: k = number of effect sizes; N = total participant number; \bar{r} = mean sample-weighted correlation; ρ = estimate of fully corrected population correlation; SD ρ = standard deviation of estimate of fully corrected population correlation; %SE = percentage of observed variance accounted for by sampling error; 95% CI = 95% confidence interval around the mean sample-weighted correlation; 95% CV = 95% credibility interval around the corrected mean population correlation; Q = chi-square test for the homogeneity of true correlations across studies; t = significant test of the difference between the sample weighted correlations.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table III. Meta-analytic results for bivariate relationships between emotional strain and OCBO.

Moderators	k	N	\bar{r}	ρ	%SE	SD ρ	95% CI		95% CV		Q	$t(df)$
							Lower	Upper	Lower	Upper		
<i>Types of Organization</i>												
Public	9	2305	-.15	-.19	5.75	.31	-.32	.01	-.81	.42	150.98***	-10.42*** (10)
Private	3	646	-.55	-.65	6.29	.21	-.76	-.33	-1.00	-.23	27.69***	
<i>Publication Status</i>												
Published	18	4392	-.19	-.24	4.82	.35	-.32	-.06	-.91	.44	353.87***	2.66** (20)
Unpublished	4	1538	-.12	-.15	15.98	.14	-.24	-.00	-.42	.13	25.04***	
<i>Rating Source</i>												
Self	13	4022	-.15	-.19	7.17	.26	-.26	-.03	-.71	.33	181.26***	-2.68** (21)
Other	9	1908	-.22	-.26	4.27	.37	-.43	-.01	-.98	.46	203.78***	
<i>Types of Sample</i>												
Employees	18	4682	-.18	-.22	4.77	.34	-.31	-.05	-.88	.44	359.33***	1.09(20)
Students	4	1248	-.14	-.18	17.49	.15	-.27	-.01	-.48	.12	22.87***	

Note: k =number of effect sizes; N =total participant number; \bar{r} =mean sample-weighted correlation; ρ =estimate of fully corrected population correlation; $SD\rho$ =standard deviation of estimate of fully corrected population correlation; %SE=percentage of observed variance accounted for by sampling error; 95% CI=95% confidence interval around the mean sample-weighted correlation; 95% CV=95% credibility interval around the corrected mean population correlation; Q =chi-square test for the homogeneity of true correlations across studies; t =significant test of the difference between the sample weighted correlations.

* $p < .05$; ** $p < .01$; *** $p < .001$.

stronger for public organization employees than for private organization employees ($t_{(11)} = 2.16, p < .05$), which supports Hypothesis 3.

For the strain-OCBO relationship, the corrected population correlation was $-.19$ ($n.s.$) for employees in public organizations, and $-.65$ ($p < .05$) for employees in private organizations. Significance testing showed that the difference between the two correlations was significant ($t_{(10)} = -10.42, p < .001$). However, this pattern was opposite from the expected effect.

Publication status. Although the corrected population correlation for strain-OCBI was significant for both published studies ($\rho = -.19, p < .05$) and unpublished studies ($\rho = -.06, p < .05$), follow-up tests revealed that the former was significantly larger ($t_{(22)} = 3.55, p < .001$). Similarly, strain had significant, negative corrected population correlations with OCBO for published studies ($\rho = -.24, p < .05$) and unpublished studies ($\rho = -.15, p < .05$), and follow-up tests indicated that the former was significantly stronger ($t_{(20)} = 2.66, p < .01$). Thus, Hypothesis 4 was fully supported because published studies showed stronger effects.

Rating source. Strain had a significant, negative corrected population correlation with self-rated OCBI ($\rho = -.21, p < .05$). The relationship between strain and other-rated OCBI however was not significant ($\rho = -.03$). Follow-up tests indicated that the difference between the two correlations was significant ($t_{(22)} = 5.48, p < .001$), which suggests that strain-based relationships involving self-rated OCBI are stronger than those involving other-rated OCBI.

Strain also had significant, negative corrected population correlations with self-rated OCBO ($\rho = -.19, p < .05$) and with other-rated OCBO ($\rho = -.26, p < .05$). The difference between the two correlations was significant ($t_{(19)} = -2.68, p < .01$), but the direction of the difference was opposite to expectations (i.e., strain had a stronger

relationship with other-rated OCBO than with self-rated OCBO). In sum, the magnitude of strain-OCB relationships varied as a function of rating source, but the nature of the difference was opposite for OCBI and OCBO.

Type of sample. The corrected population correlation between strain and OCBI for the employee sample was significant ($\rho = -.19, p < .05$). For the student sample, the corrected population correlation between strain and OCBI was not significant ($\rho = -.04, p > .05$). Follow-up analyses revealed that the strain-OCBI relationship was significantly stronger for full-time employees than for employed students ($t_{(22)} = 3.87, p < .01$).

For OCBO, its corrected population correlation with strain was $-.22$ ($p < .05$) for full-time employees and $-.18$ ($p < .05$) for employed students. However, the difference between these two correlations was not significant ($t_{(20)} = 1.09, n.s.$). Overall, for our second research question, we found that relationships involving strain and OCBI were significantly different across employee and student samples, whereas there was no difference for OCBO.

Discussion

This study reviewed relationships between employees' emotional strain and their OCB performance. Overall, results of the meta-analysis revealed that emotional strain is negatively related to OCB performance, which is consistent with the social exchange theory (Cropanzano et al., 2003), effort-reward imbalance model (Siegrist, 1996), and the resource allocation theory (Kanfer & Ackerman, 1989). Interestingly, in their recent meta-analysis, LePine et al. (2005) reported that the correlation between strain and task performance is $-.21$. In another meta-analysis, Taris (2006) reported that the correlation between emotional exhaustion (a form of emotional strain) and other-rated task performance is $-.22$. Both of these estimates are comparable to the estimate of the strain-OCB relationship observed in this study ($\rho = -.16$). Thus, it appears that when employees experience emotional strain, they withdraw effort from all fronts in order to cope with the adverse situation. In addition to the main effect, we also found support for five between-study variables moderating the strain-OCB relationship. We discuss these moderation effects in the following sections.

Moderators of the strain-OCB relationship

Type of OCB. As hypothesized, we found that strain had a stronger relationship with organizational OCB (OCBO) than with individual OCB (OCBI). We expected this effect because emotional strains (which result from negative evaluations of organizational features and events) are likely attributed to organizations rather than specific individuals (Siegrist, 1996). Behavioural responses to strain will therefore tend to target organizations (OCBO) rather than individuals (OCBI). Additionally, a stronger relationship between strain-OCBO is likely because performing OCBI builds social capital (Halbesleben & Bowler, 2007) and is more visible and thus more likely to be rewarded (Johnson & Chang, 2006). Because of these added benefits, employees may be reluctant to alter their level of OCBI (vs. OCBO) in response to strain. Research that examines the reasons underlying the performance of OCB would be useful for better understanding relationships between strain and OCBO and OCBI (see Rioux & Penner, 2001).

Type of organization. An interesting finding from the current study is that, while the strain-OCBI relationship was stronger for employees in public organizations, the strain-OCBO relationship was stronger for those in private organizations. As mentioned earlier, performing OCBI is one way to accrue social capital that employees may later withdraw when coping with stressful demands (Bolino et al., 2002). It is possible that developing positive social connections is more crucial for private sector employees because these connections not only represent support networks but may also provide valued rewards. As such, employees in private organizations may be hesitant to alter their performance of OCBI, even when experiencing strain. However, by maintaining their level of OCBI, private sector employees may simply not have the effort to spare to perform OCBO. As a result, their performance of OCBO suffers more when they experience emotional strain compared to their public sector counterparts, which may account for the stronger relationship. Because the reasoning above is speculative, future research examining how employees in public and private organizations conceptualize and prioritize OCBI and OCBO is needed.

It is also interesting that the effect of organization type was opposite from what we expected for the strain-OCBO relationship. However, it is worth noting that the estimate for this relationship for employees in private organizations was based on only three samples (two of which were sales samples that had particularly large effect sizes: r s of $-.68$ and $-.66$). Thus, the large effect may only reflect employees in sales positions, rather than those in private organizations in general. Additionally, while it is a general trend that public organizations tend to have a more rigid compensation structure, there are a few exceptions where local governmental agencies successfully adopted a performance-based pay structure (Lavigna, 2002). This finding highlights the need for researchers to pay particularly attention to the type of sample they examine when considering relationships between strain and performance.

Publication status. As expected, effect sizes from published studies were significantly stronger than those from unpublished ones. To better evaluate these differences, we conducted follow-up trim-and-fill analyses (Duval, 2005; Duval & Tweedie, 2000a,b). Trim-and-fill analysis is a nonparametric statistic that is used to assess the symmetry of funnel plots comprised of effect sizes in order to evaluate the publication bias. Results of the trim-and-fill analysis indicated that the funnel plot of strain-OCBI effect sizes was symmetrical,

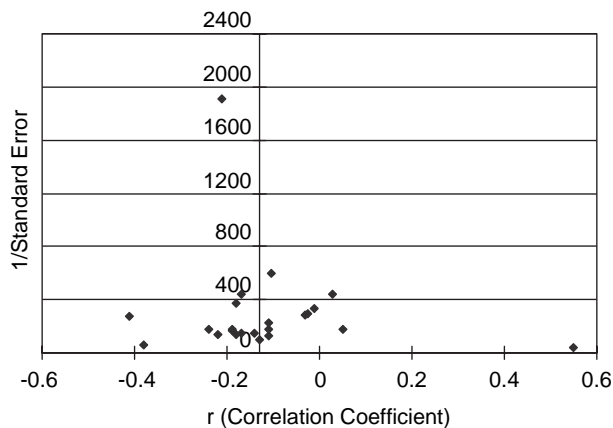


Figure 1. Funnel plot of correlation coefficients against inverted standard error for strain-OCBI relationships, where OCBI is organizational citizenship behaviour directed at individuals.

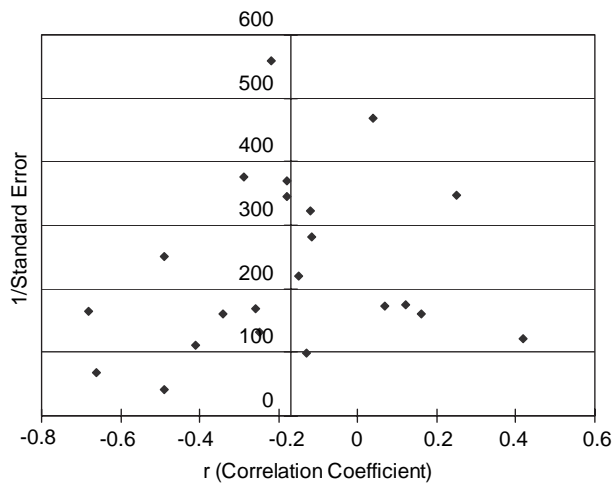


Figure 2. Funnel plot of correlation coefficients against inverted standard error for strain-OCBO relationships, where OCBO is organizational citizenship behaviour directed at the organization.

indicating similar numbers of studies with effect sizes that fell either higher or lower than the sampled-weighted mean correlation (see Figure 1). Similar results were found for the strain-OCBO effect sizes, and the funnel plot was presented in Figure 2. Based on these trim-and-fill analyses, publication status had minimum effects on the magnitude of the relationship. These seemingly contradictory results may be due to two reasons. First, despite our best effort, we could only locate a small number of unpublished studies. Thus, the results of the trim-and-fill analyses may be influenced by the small number of unpublished effect sizes available. Second, a closer examination of the published effect sizes revealed that quite a few studies found a large, significant *positive* relationship between strain and OCB (e.g., Bolino & Turnley, 2005; Halbesleben & Bowler, 2007). The presence of these outcomes may have biased the results of the trim-and-fill analysis.

Rating source. We found that the strain-OCBI relationship was stronger for self-rated OCB measures. Conversely, the strain-OCBO relationship was stronger for other-rated OCB measures. This pattern of results is particularly interesting given that common method variance is commonly cited as a research problem that leads to *upward* biased estimates of effect sizes due to correlated residuals (Crampton & Wagner, 1994; Doty & Glick, 1998; Parker, 1999). In addition, Crampton and Wagner (1994) have shown that other-rated performance may be a downward biased estimate of the true performance. Thus, self-reported data may still represent valid and reliable assessment of employee performance, and findings based on self-report data should not be automatically rejected (Frese & Zapf, 1988; Kline, Sulsky, & Rever-Moriyama, 2000; Kompier, 2005; Spector, 2006). In some cases, self-reported behaviour may even be more accurate than other-reported behaviour, especially when the recipient of the behaviour is not the individual providing the rating (e.g., Dalal, 2005; Sackett et al., 2006). Thus, researchers should carefully consider the target behaviour they intend to measure and choose raters who are best situated for providing reliable and valid assessments (Frese & Zapf, 1988; Kompier, 2005).

Type of employee. Our results showed that the strain-OCBI relationship was stronger for full-time employees than for employed students. This finding is important for two reasons.

First, it suggests that studies based on student samples underestimate the true relationship between the variables. This is especially likely for variables that are influenced by long-term relationships and investments, such as organizational commitment and embeddedness. Second, and more importantly, this discrepancy hints at the possibility that full-time employees respond to their work environment differently from employed students. Because of their long-term focus, full-time employees may be more motivated to maintain and modify exchange relationships rather than terminate the relationship when emotional strain is experienced. This tendency may be even stronger for employees with greater investment in the organization. Future studies ought to explore how employees at different career stages respond to emotional strain by comparing samples of different cohorts and examining whether the effects of strain on attitudinal and behavioural outcomes vary as a function of career stage.

Implications for research and practice

As mentioned in the introduction, emotions are leading systems that activate and coordinate subsequent cognitive and behavioural processes (Cosmides & Tooby, 2000). Because of the nature of emotions, it is likely that emotional strain precedes and influences other types of strain, including job-related ones. Furthermore, due to the extremely fast time cycles of emotional processing (Lord & Harvey, 2002), the onset of emotional strain is more difficult to prevent or control following its onset because emotional processing is mostly automatic. Indeed, if emotional strain is immune to intentional control, it can create problems via the other forms of strain as well. For example, if the onset of emotional exhaustion (an emotional strain) occurs outside employees' control, then it may make it difficult to curb, for example, absenteeism (a job-related strain) and illness (a physiological strain), which are themselves exacerbated by exhaustion. However, we are confident that the growing literature on emotional regulation (e.g., Beal, Weiss, Barros, & MacDermid, 2005; Grandey & Brauburger, 2002; Hochschild, 1983) will continue to provide effective strategies for dealing with adverse emotional reactions, including strain. For these reasons, it is important that researchers continue to explore emotional strain and its effects, as well as methods for helping employees cope with such effects.

Social exchange and resource allocation theories are also informative for organizations to help employees deal with emotional strain. For example, when strain results from perceived inequities in exchange relationships, organizations can take steps to increase employees' perceptions of the favourability of outcomes that they receive from their organization. Such steps could include showing greater support, increasing financial incentives, and providing more opportunities for autonomy and growth. One benefit of increasing rewards in order to restore equity is that employees would be more likely to maintain their current levels of effort, which includes the performance of OCB. Resource allocation theory also implies that organizations ought to help employees deal with emotional strain. Left on their own, employees must draw from their finite cognitive and attentional resources, which reduces their ability to perform effectively at work. However, by providing external support to help buffer strain, more resources can be devoted to work-related performance. Examples of external support include social support from colleagues, on-site clinicians, stress workshops, and other employee assistance programmes. These external support mechanisms would be especially helpful when increases in emotional strain can be anticipated due to, for example, organizational restructuring or reductions in workforce.

There is, however, a caveat that ought to be mentioned with respect to the preceding discussion. That is, the implications are based on the assumption that strain is an

antecedent of OCB. Although this view is consistent with social exchange and resource allocation theories, existing empirical data cannot confirm this causal ordering. As mentioned earlier, there are few longitudinal studies and even fewer experimental ones involving strain and OCB. Thus, there is considerable need for more research that facilitates causal inferences. Until then, it is unclear whether strain leads to OCB, performing OCB leads to strain, or both.

Limitations, future directions, and conclusion

We discuss four limitations of the current study. First, despite our best efforts, we only found seven unpublished studies for inclusion in our meta-analysis. While significance testing showed that published studies yielded higher effect sizes than unpublished ones, subsequent trim-and-fill analyses revealed publication status may have less effect on the effect sizes. In addition, some published studies reported high, positive relationship between strain and OCB. Thus, future studies need to continue exploring these relationships.

Second, even after conducting the four moderator analyses, a large amount of variance in correlations remained unexplained. This unexplained variance suggests that additional moderators are responsible for between-study differences in effect sizes. Future work should therefore explore this possibility. In addition to sample characteristics (e.g., employees in public vs. private organizations), variables such as occupation, industry, and country may moderate strain-OCB relationships. For example, relationships may be more pronounced among sales employees, employees in customer service industries, or countries with conservative emotional display rules in which expressing negative emotions is discouraged (Earley & Francis, 2002).

Third, although previous meta-analyses examined job-related strain, emotional and physiological strains have received far less attention. Unfortunately, we were not able to include the latter type of strain in the present meta-analysis because too few studies could be found that examined the effects of physiological strain on OCB. Although emotional strain may be more fundamental and have greater primacy, it is still important to consider other types of strain. As such, there is a need for more research that targets physiological strain, its effects, and the stressors that cause it. Until that time, our understanding of stress in the workplace is incomplete.

Finally, our meta-analysis included different measures of emotional strain. Specifically, the majority of the studies measured emotional strain by either the Work Tension Scale (House & Rizzo, 1972) or the emotional exhaustion dimension of burnout (e.g., Schaufeli, Leiter, Maslach, & Jackson, 1996). It is possible that, after correcting for unreliability, the use of different measures may still account for some of the differences in effect sizes. Thus, future studies should compare the association between different assessments of emotional strain and employee performance. Moreover, future studies should explore whether using other instruments, such as measuring the specific emotions representing strain, serves as a viable alternative for assessing emotional strain.

Overall, we identified a significant, negative relationship between emotional strain and the performance of OCB, an effect that is consistent with social exchange and resource allocation theories. Further research is needed that teases apart the causal ordering among strain and OCB and tests potential mediating variables (e.g., perceptions of exchange violations). We also encourage further research that explores ways of mitigating the effects of emotional strain. Doing so will promote healthy and efficient work environments in which employees can thrive.

Acknowledgements

The authors would like to thank Fauzia Jamaluddin and Shawn Thorp for their help with the literature search and coding of articles.

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