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Keeping Perfectionistic Academics Safe from Themselves with Mindfulness

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Abstract

While perfectionism may be perceived as necessary to perform in academia, it has also been associated with burnout. This study investigated whether work-related cognitive spillover into nonwork time explains relationships between perfectionistic concerns and exhaustion among academics. We also examine whether facets of mindfulness can safeguard against exhaustion among perfectionistic academics (moderated mediation). We used a one-year multi-wave prospective design with 262 academics. Results suggested that non-reactivity protects perfectionistic academics from emotional exhaustion. These findings highlight the potential of mindfulness-based interventions for reducing the adverse impact of perfectionism.

Keywords: academics; perfectionistic concerns; emotional exhaustion; perseverative cognition; mindfulness

Keeping Perfectionistic Academics Safe from Themselves with Mindfulness

Burnout has emerged as a serious concern for academics since approximately one in four report high levels of burnout (Lackritz, 2004; Padilla & Thompson, 2016). Emotional exhaustion (i.e., feeling overloaded and having excessively depleted personal resources) is the most studied dimension of burnout (Maslach et al., 2001). Its deleterious physical, psychological, and occupational consequences have been clearly demonstrated (see Salvagioni et al., 2017).

Emotional exhaustion: An effort-recovery model (ERM) perspective

According to the ERM (Meijman & Mulder, 1998), work situations require individuals to mobilize efforts to fulfill their responsibilities leading to short-term load reactions that are reversible through a period of recovery. However, without having had a proper recovery, the initially adaptive and protective load reactions can, over time, become maladaptive and lead to chronic levels of work fatigue and emotional exhaustion (Geurts & Sonnentag, 2006; Meijman & Mulder, 1998).

Perfectionistic concerns and emotional exhaustion

Perfectionism is a multidimensional trait (Cox et al., 2002) comprised of 1) perfectionistic strivings (the tendency of an individual to set and pursue exceedingly high standards of performance) and 2) perfectionistic concerns (the fear of failure and the overly critical style of self-evaluation if perfection isn't achieved;). Although recent evidence (Limburg et al., 2017) suggest that perfectionistic strivings is also a maladaptive trait, albeit to a lesser extent than perfectionistic concerns, this study will focus on perfectionistic concerns as it has been shown to be associated with more critical self-judgments (Wimberley et al., 2015).

In accordance with the ERM (Meijman & Mulder, 1998), researchers have hypothesized that perfectionism might be associated with high levels of emotional exhaustion (e.g., Flaxman et

al., 2012; Hill & Curran, 2016; Taris et al., 2010). By being overly concerned about making mistakes (i.e., concerns over mistake, COM) and doubting the quality of their work (i.e., doubt about actions, DA), these individuals must mobilize a substantial amount of effort which can drain mental energy and create load reactions (Taris et al., 2010). If sustained without appropriate recovery, these load reactions may lead to emotional exhaustion (Meijman & Mulder, 1998). It is important to note that additional indicators of perfectionistic concerns have been studied (e.g., socially prescribed perfectionism, parental criticism, and expectations (e.g., Frost et al., 1900; Hewitt et al., 1991)), but only COM and DA are considered here as they are directly related to the work-related cognitive spillover. Despite growing evidence of a link between perfectionistic concerns and emotional exhaustion, a recent review highlighted a need for longitudinal research to track the consequences of perfectionism over time (Harari et al., 2018). Based on the preceding discussion, a one-year multi-wave prospective design will be used to test the following hypothesis:

H1: (a) concerns over mistakes (COM) and (b) doubts about actions (DA) will be positively and longitudinally related to academics' emotional exhaustion.

The role of cognitive spillover as a mediator

Few studies have tried to identify mechanisms explaining why employees high in perfectionistic concerns tend to deplete their mental energy and have difficulties recovering from work demands during nonwork time (e.g., Flaxman et al., 2012; Taris et al., 2010). To our knowledge, only one study (Flaxman et al., 2012) sought to clarify this relationship in academics. Using week-level measures, they explored the mediating role of two forms of work-related cognitive spillover (i.e., worry and rumination). They found that academics with a high level of DA experienced higher levels of worry and rumination during a respite from work when

compared to their less perfectionistic counterparts. Upon returning to work, academics with higher perfectionism experienced significantly more anxiety, fatigue, and emotional exhaustion. The authors concluded that perfectionistic individuals are prone to experiencing spillover of work-related cognitions into their leisure time, with this heightened propensity mediating the relationship between perfectionism and negative affective states.

Flett et al. (2016)'s perfectionism cognition theory which describes the cognitive processes and mechanisms of perfectionism, posits that perfectionists are susceptible to cognitive spillover (e.g., anticipatory thinking, rumination, frequent automatic thoughts) since it serves a function for the perfectionistic individual. Indeed, cognitive spillover may be seen as a reparative solution and an encouragement to invest the effort required to achieve perfection in the hope of reducing the sense of not fitting in or not mattering.

H2: (a) COM and (b) DA will be positively and longitudinally related to academics' work-related cognitive spillover into nonwork time.

This study aims to determine whether Flaxman et al. (2012)'s findings, which linked perfectionism to exhaustion among academics around a brief vacation, would be evident over a longer evaluative timeframe. Moreover, whereas that study focused on perfectionistic academics' propensity for worry and ruminating, this study examines the influence of perfectionism on a broader range of spillover cognitions, including negative affective rumination, problem-solving thinking, and lack of cognitive detachment (i.e., an ability to "switch-off") from one's work during leisure time over a one-year period.

H3: Work-related cognitive spillover into nonwork time will be positively and longitudinally related to academics' emotional exhaustion.

H4: The positive relationships of (a) COM and (b) DA with academics' emotional exhaustion will be mediated by a heightened tendency for work-related cognitive spillover into nonwork time.

Mindfulness as a potential moderator

Baer and colleagues (2006) conceptualize mindfulness as a set of five relatively distinct facets: (1) non-reactivity to inner experience (allowing thoughts and feelings to come and go without getting carried away by them), (2) describing (being able to label internal experiences in words), (3) non-judging of experience (taking a non-evaluative stand toward thoughts and feelings), (4) observing (noticing and attending to internal and external experiences), and (5) acting with awareness (attending to one's activities of the moment).

Conceptually, some facets of mindfulness have been theorized as the antithesis of both perfectionism (Flett et al., 2020) and cognitive spillover (also refered to as cognitive perseveration/perseverative cognition; e.g., Flaxman et al., 2012, 2018). Thus, mindfulness is increasingly viewed as a personal resource that may help prevent stress-related cognitions from escalating into cycles of perseverative cognition and its associated psychological consequences (Raes & Williams, 2010).

The mindfulness-stress-buffering account (Creswell & Lindsay, 2014) offers an overarching theoretical framework for clarifying the potential moderating role of mindfulness in the relationship between perfectionism and cognitive spillover. According to Creswell and Lindsay (2014), mindfulness increases a person's capacity to observe inner reactions to stressors as they arise with acceptance and equanimity, particularly in contexts of high stress. They posit that mindfulness enables individuals to buffer primary threat appraisals, such as those induced by perfectionistic thoughts, and facilitate positive and adaptive secondary appraisals. Thus,

mindfulness may help to attenuate early attentional reactivity to threatening stimuli, and to reduce the tendency to become cognitively preoccupied with such threats.

In this study, we explore whether mindfulness serve a protective function against the emergence of job burnout by reducing the tendency for work-related cognitions that spill over into perfectionistic academics' leisure time. We test the premise that mindfulness will moderate the predicted indirect relationship between perfectionistic concerns and emotional exhaustion via work-related cognitive spillover into nonwork time (see Figure 1).

H5: Mindfulness will moderate the indirect relationships between (a) COM and (b) DA and academics' emotional exhaustion via work-related cognitive spillover into nonwork time.

[Figure 1]

Methods

Participants and procedures

The Institutional Review Board of the researchers' university approved this study. Participants were academic employees from 12 Canadian universities recruited via an email including a general description of the project, the consent form, and the first questionnaire composed of socio-demographics, control variables, perfectionistic concerns, and mindfulness. The second questionnaire was completed on-line six months later and evaluated work-related cognitive spillover during nonwork time. The questionnaire assessing emotional exhaustion was completed one year after the first. This study was part of a larger project. To lessen burden, all scales were abridge following the recommendations of Coste et al. (1997).

Data were collected from April 2018 to April 2019. Each questionnaire completed gave participants a chance to win a prize. To be included, participants had to hold a tenured or tenure

track position leading to a permanent position. A total of 8,393 academics were contacted, 918 completed the first questionnaire, 465 the second, and 262 all three questionnaires (38.5% men, 58.8% women, and 2.7% preferred not to answer). Little's MCAR test showed that the missing data were randomly distributed: $\chi^2 = 316.10$ ($df = 328$, $p = .672$), supporting the subsequent use of the normal theory maximum likelihood (ML) approach (Lee, 2012). Participants ranged from 28 to 81 years old ($M = 47.40$, $SD = 9.16$). On average, they had held their current position for 14.58 years ($SD = 9.14$), had supervised seven graduate students ($M = 7.37$; $SD = 4.13$), and had two children ($M = 2.27$; $SD = 1.11$).

Perfectionistic Concerns. COM (α=.81, i.e., "If I fail at work, I am a failure as a person") was measured with three items from the COM subscale of the FMPS short-form (Cox et al., 2002) along with a fourth concern item from the FMPS-brief scale (Burgess et al., 2016). DA (α=.78, i.e., " I usually have doubts about the simple everyday things I do") were measured using three items from the DA subscale of the FMPS short form (Cox et al., 2002). Items were answered on a 5-point scale (1 = totally disagree; 5 = totally agree).

Dispositional Mindfulness. Dispositional mindfulness was measured using one item per subscale of the Five Facet Mindfulness Questionnaire (Baer et al., 2006) (non-reactivity to inner experience (i.e., "When I have distressing thoughts or images, I "step back"); describing (i.e., "I have trouble thinking of the right words to express how I feel about things." [reverse scored]); non-judging of inner experience (i.e., "I think some of my emotions are bad or inappropriate and I shouldn't feel them" [reverse scored]); observing (i.e., "I pay attention to sensations, such as the wind in my hair or the sun on my face"), and acting with awareness (i.e., "I find myself doing things without paying attention" [reverse scored])). Items with the highest factor loading on each mindfulness facets from the original publication (Baer et al., 2006) were selected. Items were

answered on a 5-point scale (1 = never or very rarely true; 5 = very often or always true). The Cronbach's alpha for the overall scale (α =.55), was below the acceptable value of .70 (Nunnally et al., 1967). In the original publication of this questionnaire, the inter-facet correlations and the factor loadings on a higher-order mindfulness latent variable were found to be modest (Baer et al., 2006). For these reasons, and in line with the conceptualization of mindfulness as a multifaceted construct (e.g., Cox et al., 2012), each of the five individual mindfulness facets will be treated individually in the analysis.

Even though the longer version of the scale would have been preferred, good reliability and validity have been reported when using well-worded one-item measures (e.g., Burisch, 1984, 1997; Spörrle & Bekk, 2014) and given the highly specialized target population under study and the longitudinal design, we seek to maximize participation and limit attrition with a shorter questionnaire.

Work-Related Cognitive Spillover into Nonwork Time. Cognitive spillover into non-work time was evaluated using two items from each subscale of the Work-Related Rumination Questionnaire (WRRQ; Cropley et al., 2012) (i.e., affective rumination subscale (negative affect-laden cognitions), problem-solving rumination scale (re-evaluation of work issues, future planning, and solution-focused cognitive content), and psychological detachment subscale (ability to cognitively "switch off" from job demands outside of working hours)). Sample item is "Do you think about tasks that need to be done at work the next day?" Items were answered on a 5-point scale (1 = never; 5 = almost always; α = .83).

Emotional Exhaustion. We used the 5-item emotional exhaustion subscale from the Maslach Burnout Inventory General Survey (MBI-GS; Schaufeli et al., 1996) to assess job-

induced exhaustion (e.g., "I feel emotionally drained from work"). Participants indicated how often they had experienced each feeling on a 7-point scale (1 = never; 7 = everyday; $\alpha = .92$).

Control Variables. Gender (Purvanova & Muros, 2010), numbers of graduate students (Lackritz, 2004), courses taught per year (Lackritz, 2004) and children (Sonnentag et al., 2010), and year when participants obtained their position (1 = 1969 to 50 = 2018) (Baeriswyl et al., 2016) were assessed, as they have previously been found to influence emotional exhaustion.

[Table 1]

Statistical Analyses

Path analyses were conducted using Mplus (Muthén & Muthén, 2012) to test the hypotheses (see Figure 1). To assess the significance of mediating effects and establish whether the conditional indirect effect differed in strength across different levels of the moderators, we performed 5,000 bootstrapping resamples and computed 95% confidence intervals (CIs; Preacher et al., 2007). The Mplus syntax for Model 7 (Hayes'(2012) SPSS PROCESS) developed by Stride and colleagues (2015) was used to test the moderated mediation model. Variables were standardized and emotional exhaustion was defined as the dependent variable, COM and DA as independent variables, work-related cognitive spillover into non-work time as a mediator, and each facet of dispositional mindfulness as moderators on both mediation paths. Criteria for fit indices were CFI and TLI $\geq .90$ (Hoyle, 1995), RMSEA$\leq .08$ (Browne & Cudeck, 1993), and SRMR$\leq .08$ (Hu & Bentler, 1999). Multivariate normality was assessed with the Mahalanobis distance using each mindfulness facets subsequently. No problematic cases were identified.

Results

Model Testing

Table 2 reports the fit indices Three of the mindfulness facets models showed acceptable fit to the data: non-reactivity, observing, and acting with awareness.

[Table 2]

The total effect of COM on emotional exhaustion was not significant, while the total effect of DA on emotional exhaustion was significant (supporting H1b but not H1a). Both COM and DA were positively related to work-related cognitive spillover into nonwork time (supporting H2a and H2b). Results indicate a significant relationship between work-related cognitive spillover into non-work time and emotional exhaustion (supporting H3). The indirect effects of COM and DA on emotional exhaustion through work-related cognitive spillover were significant (supporting H4a and H4b).

Finally, non-reactivity to inner experience (Model 1) significantly moderated the indirect effect of COM on emotional exhaustion through work-related spillover into nonwork time (see Table 3). The indirect effect of COM on emotional exhaustion through work-related cognitive spillover was significant and positive when academics' non-reactivity level was at the mean or lower (see Table 4). The strength of this conditional indirect effect significantly decreased with increasing levels of non-reactivity and was eliminated when non-reactivity was high. These results partly support H5a. None of the mindfulness facets significantly moderated the indirect effect of DA on emotional exhaustion (H5b was not supported).

[Tables 3 and 4]

Discussion

This study had two interrelated aims: 1) examine the role of work-related cognitive spillover into nonwork time as a mechanism linking perfectionistic concerns and emotional

exhaustion among university academics; and 2) examine the utility of dispositional mindfulness as a protective factor against the risk of exhaustion among perfectionistic individuals. In line with predictions, a tendency to continue thinking about work during leisure time mediate the longitudinal relationships between perfectionistic concerns characteristics (i.e., COM and DA) and exhaustion among academics. Furthermore, our results indicate that the ability to be less reactive toward difficult inner experience (i.e., the non-reactivity facet) serves a uniquely protective function for perfectionistic academics, reducing the maladaptive influence of work-related cognitive spillover on emotional exhaustion.

Theoretical Implications

Our study makes several novel contributions to the literature examining the role of perfectionism as an underlying personality vulnerability that can impair the ability to recover from work demands (e.g., Flaxman et al., 2012); and, to the emergent strand of theoretical and empirical work focused on understanding the relationships between perfectionism and mindfulness characteristics (e.g., Flett et al., 2020). Our findings are consistent with a wider body of research that has established perfectionistic concerns as a robust predictor of psychological strain (e.g., Harari et al., 2018; Hill & Curran, 2016; Flaxman et al., 2018). It is noteworthy that we found significant relationships between markers of perfectionistic concerns and the emotional exhaustion component of job burnout captured one year later.

Our modeling reveals some subtle differences in the predictive influences of the COM and DA facets of perfectionistic concerns. Specifically, the total effect of DA on emotional exhaustion is stronger than the corresponding effect of COM and remains significant while accounting for the mediating effect of work-related cognitive spillover during nonwork time. Doubting the quality of one's actions represents a somewhat "obsessional" feature of

perfectionism (Frost et al., 1990, p. 451). Academics who possess this characteristic may exhibit additional types of cognitions and behaviors beyond the tendency to think about work during leisure time as assessed in this study. In addition, the indirect relationship between DA and exhaustion was not significantly moderated by mindfulness, further implying that this facet may be capturing an especially maladaptive feature of perfectionistic concerns.

Another contribution stems from our investigation of the mediating role of prolonged cognitive attachment to work during leisure time in the longitudinal relationship between perfectionistic concerns and exhaustion. There is compelling evidence showing that negatively laden forms of perseverative cognition--especially worry and rumination-- mediate perfectionism's association with mental ill-health (Xie et al., 2019). In line with a core tenet of the ERM (Geurts & Sonnentag, 2006; Meijman & Mulder, 1998), our findings lend novel support to the notion that perfectionist academics' tendency to continue thinking about work while at home heightens their vulnerability for over-depleting (work-related) energy resources, placing them at risk of job burnout.

The moderated mediation analyses results suggest that non-reactivity (a mindfulness facet) may offer some protection against the development of job burnout as it buffered the otherwise adverse influence of perfectionism on exhaustion (mediated via the tendency to think about work during nonwork time). For the perfectionistic academics who scored high in non-reactivity, the previously well-established relationship between COM and exhaustion was not significant. This finding implies that there exists a subgroup of perfectionistic individuals who have a high level of concern about failing or making mistakes (i.e., perfectionistic concerns), but who are afforded some protection from the consequences of this (typically) maladaptive

personality characteristic because they can adopt a less reactive attitude toward difficult thoughts and feelings.

Limitations and Directions for Future Research

The one-year multi-wave prospective design use is a major strength. Nevertheless, we only used self-report measures. Also, only one item of the Five Facet Mindfulness Questionnaire was used per facet. However, using single-item measures chosen from existing and validated scales is a valid approach that reduces respondents' energy commitment (Fisher et al., 2016). Finally, we only investigated perfectionistic concerns while perfectionistic strivings have also been shown to be consequential (Limburg et al., 2017).

Conclusion and Practical Implications

This study helps identify how a dispositional difference (perfectionistic concerns) leads to emotional exhaustion (through prolonged cognitive attachment to work during non-work time). It also deepens the understanding of the protective function of mindfulness by providing insight into how non-reactivity can safeguard against emotional exhaustion in academics who are concerned over their mistakes. Interventions, such as Mindfulness-Based Stress Reduction Programs (MBSR; Kabat-Zinn, 1982) could be adapted for academics who show traits of COM by emphasizing non-reactivity.

Table 1. Descriptive statistics and correlations between study variables

	M	*SD*	1	2	3	4	5	6	7	8
1. COM	2.54	.92	α=.81							
2. DA	2.54	.99	.64**	α=.78						
3. Non-reactivity	3.26	.90	-.24**	-.29**						
4. Describing	3.60	.99	-.25**	-.34**	.26**					
5. Non-judging	3.68	1.00	-.38**	-.41**	.28**	.40**				
6. Observing	3.27	1.08	-.03	-.07	.23**	.12	.20**			
7. Acting with awareness	3.23	.98	-.10	-.27**	.11	.27**	.24**	-.10		
8. Cognitive spillover	3.49	.73	.40**	.39**	-.32**	-.16**	-.26**	.01	-.20**	
9. Emotional exhaustion	4.27	1.51	.35**	.49**	-.25**	-.24**	-.23**	-.01	-.29**	.60**

Note. n = 262; COM: Concerns over mistakes; DA: Doubts about actions; * $p < .05$; ** $p < .01$.

Table 2. Models' fit indices

Model	χ^2	*df*	CFI	TLI	RMSEA,90% CI	SRMR
Non-reactivity	38.53	15	.90	.90	.08 [.05, .11]	.06
Describing	40.42	15	.88	.88	.08 [.05, .11]	.07
Non-judging	47.83	15	.87	.87	.09 [.07, .12]	.06
Observing	33.46	15	.91	.91	.07 [.04, .10]	.05
Acting with awareness	37.00	15	.90	.90	.08 [.05, .11]	.07

Table 3. The effect of perfectionistic concerns on emotional exhaustion through work-related cognitive spillover, moderated by mindfulness facets.

	Work-related cognitive spillover						Emotional exhaustion					
	Model 1 (Non-reactivity)		Model 2 (Describing)		Model 3 (Non-judging)		Model 1 (Non-reactivity)		Model 2 (Describing)		Model 3 (Non-judging)	
	β (*SD*)	95% C.I.	*β* (*SD*)	95% C.I.	*β* (*SD*)	95% C.I.	*β* (*SD*)	95% C.I.	*β* (*SD*)	95% C.I.	*β* (*SD*)	95% C.I.
Number of courses taught per year	.04 (.04)	[-.00, .11]	.03 (.04)	[-.05,.10]	.03 (.04)	[-.04, .10]	.01 (.01)	[.00, .11]	.05* (.03)	[.00, .11]	.05* (.03)	[.00, .11]
Year of entry into position	.02* (.01)	[.00, .03]	.02** (.01)	[.00,.03]	.02* (.01)	[.00, .03]	.05* (.03)	[.00, .02]	.01* (.01)	[.00,.02]	.01* (.01)	[.00, .02]
COM	.24*** (.07)	[.11, .37]	.25*** (.07)	[.10,.40]	.17* (.07)	[.04, .31]	-.07 (.06)	[-.19, .06]	-.07 (.07)	[-.19, .07]	-.05 (.06)	[-.17, .08]
DA	.15* (.07)	[.02, .29]	.21** (.07)	[.07,.34]	.16* (.07)	[.03,.29]	.33*** (.06)	[.21, .45]	.33*** (.06)	[.21, .46]	.31*** (.06)	[.19, .43]
Mediator							.46*** (.05)	[.36, .56]	.45*** (.05)	[.35, .55]	.46*** (.05)	[.37, .56]
Moderator	-.23*** (.06)	[-.33, -.11]	-.04 (.07)	[-.17,.09]	-.31*** (.06)	[-.42, -.20]						
COM X Mindfulness	-.13* (.06)	[-.24, -.01]	.02 (.08)	[-.13,.17]	-.03 (.08)	[-.18, .12]						
DA X Mindfulness	.07 (.06)	[-.04, .19]	.05 (.07)	[-.08,.18]	.00 (.07)	[-.13, .14]						

Table 3. (cont'd).

	Work-related cognitive spillover				Emotional exhaustion			
	Model 4 (Observing)		Model 5 (Awareness)		Model 4 (Observing)		Model 5 (Awareness)	
	β (*SD*)	95% C.I.	*β* (*SD*)	95% C.I.	*β* (*SD*)	95% C.I.	*β* (*SD*)	95% C.I.
Number of courses taught per year	.02 (.04)	[-.05,.10]	.02 (.04)	[-.05, .10]	.05* (.03)	[.00, .11]	.05* (.03)	[.00, .11]
Year of entry into position	.02** (.01)	[.00,.03]	.02* (.01)	[.00, .03]	.01* (.01)	[.00,.02]	.01* (.01)	[.00, .02]
COM	.27*** (.07)	[.13,.42]	.26*** (.08)	[.12, .41]	-.07 (.07)	[-.19, .07]	-.07 (.07)	[-.19, .07]
DA	.19** (.07)	[.06,.32]	.17* (.07)	[.03,.32]	.33*** (.07)	[.21, .46]	.33*** (.06)	[.21, .46]
Mediator					.45*** (.05)	[.35, .55]	.45*** (.05)	[.35, .55]
Moderator	.02 (.06)	[-.10,.14]	-.09 (.06)	[-.21, .03]				
COM X Mindfulness	-.11 (.08)	[-.27,.04]	-.02 (.07)	[-.15, .11]				
DA X Mindfulness	.12 (.07)	[-.01,.25]	.01 (.06)	[-.11, .13]				

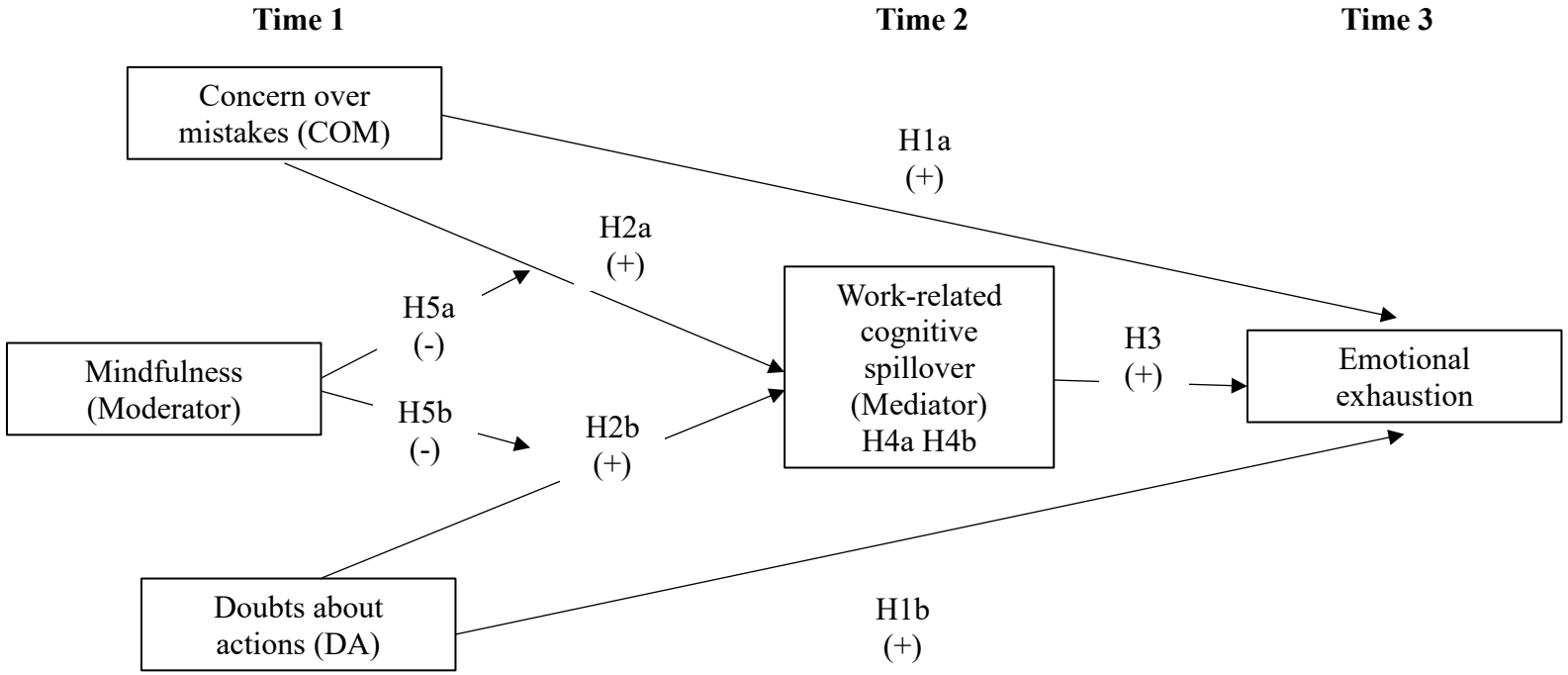
Note. COM: Concerns over mistakes; DA: Doubts about actions; *β* = standardized coefficients * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 4. Conditional indirect effect of COM on emotional exhaustion through work-related cognitive spillover, at various levels of non-reactivity.

Independent variable	Moderator	Level of the moderator	Conditional indirect effect	SE	LLCI	ULCI
COM (T1)	Non-Reactivity (T1)	Low	.17	.04	.08	.26
		Medium	.11	.03	.05	.17
		High	.05	.04	-.03	.13

Note. Values represent standardized coefficients; LLCI = lower level of confidence interval; ULCI = upper level of confidence interval; *S*E = standard error; Low = Mean – 1 standard deviation; Medium = Mean; High = Mean +1 standard deviation.

Figure 1. Proposed moderated mediation model.



References

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*(1), 27-45. doi:10.1177/1073191105283504

Baeriswyl, S., Krause, A., & Schwaninger, A. (2016). Emotional exhaustion and job satisfaction in airport security officers–work–family conflict as mediator in the job demands–resources model. *Frontiers in Psychology, 7*(663), 1-13. doi:10.3389/fpsyg.2016.00663

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen and J. S. Long (Eds.), *Testing structural equation models.* Newbury Park, CA: Sage.Burgess, A. M., Frost, R. O., & DiBartolo, P. M. (2016). Development and validation of the frost multidimensional perfectionism scale–brief. *Journal of Psychoeducational Assessment, 34*(7), 620-633.

Burisch, M. (1984). You don't always get what you pay for: Measuring depression with short and simple versus long and sophisticated scales. *Journal of Research in Personality,* 18(1), 81-98.

Burisch, M. (1997). Test length and validity revisited. *European Journal of Personality*, 11(4), 303-315.

Coste, J., Guillemin, F., Pouchot, J., & Fermanian, J. (1997). Methodological approaches to shortening composite measurement scales. *Journal of Clinical Epidemiology, 50*(3), 247-252. doi:10.1016/S0895-4356(96)00363-0

Cox, B. J., Enns, M. W., & Clara, I. P. (2002). The multidimensional structure of perfectionism in clinically distressed and college student samples. *Psychological Assessment, 14*(3), 365-373. doi:10.1037/1040-3590.14.3.365Geurts, S. A. E., & Sonnentag, S. (2006). Recovery as an explanatory mechanism in the relation between acute stress reactions and chronic health impairment. *Scandinavian Journal of Work Environnement and Health 32*, 482-492. doi:10.5271/sjweh.1053

Creswell, J. D., & Lindsay, E. K. (2014). How does mindfulness training affect health? A mindfulness stress buffering account. *Current Directions in Psychological Science, 23*(6), 401-407. doi:10.1177/0963721414547415

Cropley, M., Michalianou, G., Pravettoni, G., & Millward, L. J. (2012). The relation of post-work ruminative thinking with eating behaviour. *Stress and Health, 28*(1), 23-30. doi:10.1002/smi.1397

Fisher, G. G., Matthews, R. A., & Gibbons, A. M. (2016). Developing and investigating the use of single-item measures in organizational research. *Journal of Occupational Health Psychology, 21*(1), 3-23. doi:10.1037/a0039139

Flaxman, P. E., Ménard, J., Bond, F. W., & Kinman, G. (2012). Academics' experiences of a respite from work: Effects of self-critical perfectionism and perseverative cognition on postrespite well-being. *Journal of Applied Psychology, 97*(4), 854-865. doi:10.1037/a0028055

Flaxman, P. E., Stride, C. B., Söderberg, M., Lloyd, J., Guenole, N., & Bond, F. W. (2018). Relationships between two dimensions of employee perfectionism, postwork cognitive processing, and work day functioning. *European Journal of Work and Organizational Psychology*, *27*(1), 56-69. doi:10.1080/1359432X.2017.1391792

Flett, G. L., Nepon, T., & Hewitt, P. L. (2016). Perfectionism, worry, and rumination in health and mental health: A review and a conceptual framework for a cognitive theory of perfectionism. In F. M. Sirois & D. S. Molnar (Eds.), *Perfectionism, health, and well-being* (pp. 121-155). Switzerland, AG: Springer.

Flett, G. L., Nepon, T., Hewitt, P. L., & Rose, A. L. (2020). Why perfectionism is antithetical to mindfulness: a conceptual and empirical analysis and consideration of treatment implications. *International Journal of Mental Health and Addiction*, 1-21. doi:10.1007/s11469-020-00252-w

Frost, R. O., Heimberg, R. G., Holt, C. S., Mattia, J. I., & Neubauer, A. L. (1993). A comparison of two measures of perfectionism. *Personality and Individual Differences, 14*(1), 119-126. doi:10.1016/0191-8869(93)90181-2

Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research, 14*(5), 449-468. doi:10.1007/bf01172967

Geurts, S. A., & Sonnentag, S. (2006). Recovery as an explanatory mechanism in the relation between acute stress reactions and chronic health impairment. *Scandinavian journal of work, environment & health*, 32(6) 482-492.

Harari, D., Swider, B. W., Steed, L. B., & Breidenthal, A. P. (2018). Is perfect good? A meta-analysis of perfectionism in the workplace. *Journal of Applied Psychology, 103*(10), 1121-1144. doi:10.1037/apl0000324

Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, mod- eration, and conditional process modeling [White paper]. Retrieved from http://www.afhayes.com/ public/process2012.pdf

Hewitt, P. L., Flett, G. L., Turnbull-Donovan, W., & Mikail, S. F. (1991). The Multidimensional Perfectionism Scale: Reliability, validity, and psychometric properties in psychiatric samples. *Psychological Assessment: A Journal of Consulting and Clinical Psychology*, 3(3), 464.

Hill, A. P., & Curran, T. (2016). Multidimensional perfectionism and burnout: A meta-analysis. *Personality and Social Psychology Review, 20*(3), 269-288. doi:10.1177/1088868315596286

Hoyle, R. H. (1995). *The structural equation modeling approach: Basic concepts and fundamental issues*. Thousand Oaks, CA: Sage.

Hu, L. t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1-55. doi:10.1080/10705519909540118

Kabat-Zinn, J. (1982). *An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. General Hospital Psychiatry, 4*(1), 33-47. doi:10.1016/0163-8343(82)90026-3

Lackritz, J. R. (2004). Exploring burnout among university faculty: Incidence, performance, and demographic issues. *Teaching and Teacher Education, 20*(7), 713-729. doi:10.1016/j.tate.2004.07.002

Limburg, K., Watson, H.J., Hagger, M.S., & Egan, S.J. (2017). The relationship between perfectionism and psychopathology: a meta-analysis. *Journal of Clinical Psychology*, 73(10), 1301-1326. https://doi.org/10.1002/jclp.22435

Meijman, T. F., & Mulder, G. (1998). Psychological aspects of workload. In P. J. D. Drenth, H. Thierry, & C. J. de Wolff (Eds.), Handbook of work and organizational psychology (2nd ed.). *Handbook of work and organizational: Work psychology* (p. 5–33). Psychology Press/Erlbaum (UK) Taylor & Francis.

Muthén, B. O., & Muthén, L. K. (2012). *Mplus User's guide : Seventh Edition*. Los Angeles, CA: Muthén & Muthén

Nunnally, J. C., Bernstein, I., & Berge, J. M. T. (1967). *Psychometric theory* (Vol. 226). New York: McGraw-Hill.

Padilla, M. A., & Thompson, J. N. (2016). Burning out faculty at doctoral research universities. *Stress and Health, 32*(5), 551-558. doi:10.1002/smi.2661

Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate behavioral research, 42*(1), 185-227. doi:10.1080/00273170701341316

Purvanova, R. K., & Muros, J. P. (2010). Gender differences in burnout: A meta-analysis. *Journal of Vocational Behavior, 77*(2), 168-185. doi:10.1016/j.jvb.2010.04.006

Raes, F., & Williams, J. M. G. (2010). The relationship between mindfulness and uncontrollability of ruminative thinking. *Mindfulness, 1*(4), 199-203. doi:10.1007/s12671-010-0021-6

Salvagioni, D. A. J., Melanda, F. N., Mesas, A. E., González, A. D., Gabani, F. L., & Andrade, S. M. D. (2017). Physical, psychological and occupational consequences of job burnout: A systematic review of prospective studies. *PloS one*, *12*(10), e0185781.

Schaufeli, W., Leiter, M. P., Maslach, C., & Jackson, S. E. (1996). The MBI-General Survey. In S. E. J. C. Maslach, and M.P Leiter (Ed.), *Maslach Burnout Inventory Manual (3rd ed.)* (pp. 19-26). Palo Alto, CA: Consulting Psychologists Press.

Stride, C. B., Gardner, S., Catley, N., & Thomas, F. (2015). Mplus code for the mediation, moderation, and moderated mediation model templates from Andrew Hayes' PROCESS analysis examples. Retrieved from http://www.figureitout.org.uk.

Spörrle, M., & Bekk, M. (2014). Meta-analytic guidelines for evaluating single-item reliabilities of personality instruments. *Assessment*, 21(3), 272-285.

Wimberley, T. E., Mintz, L. B., & Suh, H. (2015). Perfectionism and mindfulness: Effectiveness of a bibliotherapy intervention. *Mindfulness*, 7(2), 433-444. doi:10.1007/s12671-015-0460-1Xie, Yu & Kong, Yan & Yang, Jiyu & Chen, Faxiang. (2019). Perfectionism, worry, rumination, and distress: A meta-analysis of the evidence for the perfectionism cognition theory. *Personality and Individual*