

**Understanding how employees unwind after work:
Expanding the construct of “Recovery”**

by

Sonya N. M. Stevens

**A Dissertation Submitted to
Saint Mary’s University, Halifax, Nova Scotia
in Partial fulfillment of the Requirements for
the Degree of PhD in Industrial/Organizational Psychology**

August 12, 2010, Halifax, Nova Scotia

© Sonya N. M. Stevens, 2010

Approved: **Arla L. Day, PhD**
 Supervisor

Approved: **E. Kevin Kelloway, PhD**
 Committee Member

Approved: **Lori Francis, PhD**
 Committee Member

Approved: **Patrick McGrath, PhD**
 Committee Member

Approved: **Charlotte Fritz, PhD**
 External Examiner

Date: **August 12, 2010**



Library and Archives
Canada

Published Heritage
Branch

395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque et
Archives Canada

Direction du
Patrimoine de l'édition

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file *Votre référence*
ISBN: 978-0-494-68809-0
Our file *Notre référence*
ISBN: 978-0-494-68809-0

NOTICE:

The author has granted a non-exclusive license allowing Library and Archives Canada to reproduce, publish, archive, preserve, conserve, communicate to the public by telecommunication or on the Internet, loan, distribute and sell theses worldwide, for commercial or non-commercial purposes, in microform, paper, electronic and/or any other formats.

The author retains copyright ownership and moral rights in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

AVIS:

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque et Archives Canada de reproduire, publier, archiver, sauvegarder, conserver, transmettre au public par télécommunication ou par l'Internet, prêter, distribuer et vendre des thèses partout dans le monde, à des fins commerciales ou autres, sur support microforme, papier, électronique et/ou autres formats.

L'auteur conserve la propriété du droit d'auteur et des droits moraux qui protègent cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

In compliance with the Canadian Privacy Act some supporting forms may have been removed from this thesis.

While these forms may be included in the document page count, their removal does not represent any loss of content from the thesis.

Conformément à la loi canadienne sur la protection de la vie privée, quelques formulaires secondaires ont été enlevés de cette thèse.

Bien que ces formulaires aient inclus dans la pagination, il n'y aura aucun contenu manquant.

■ ■ ■
Canada

Table of Contents

List of Appendices.....	v
List of Tables	vi
List of Figures.....	vii
Acknowledgments	viii
Abstract.....	x
GENERAL INTRODUCTION:	1
<i>Recovery Defined.....</i>	<i>4</i>
<i>Summary</i>	<i>8</i>
STUDY 1	
Study 1: Introduction	10
<i>Expanding the Construct of Recovery.....</i>	<i>11</i>
Study 1: Methods	14
Study 1: Results.....	16
<i>Activity Identification Focus Groups</i>	<i>16</i>
<i>Activity Sort Task.....</i>	<i>17</i>
<i>Item Writing.....</i>	<i>19</i>
<i>Item Sort-Task.....</i>	<i>19</i>
<i>Item Review.....</i>	<i>21</i>
Study 1: Discussion	25
<i>Limitations and Future Research.....</i>	<i>26</i>
STUDY 2	
Study 2: Introduction	28
<i>Recovery Factor Structure.....</i>	<i>28</i>
<i>Recovery and Coping.....</i>	<i>30</i>
<i>Recovery and the Job-Demands Resource Model</i>	<i>32</i>

Study 2: Methods	34
<i>Participants and Procedure.....</i>	<i>34</i>
<i>Measures</i>	<i>36</i>
Study 2: Results.....	41
<i>Recovery Factor Structure.....</i>	<i>43</i>
<i>Higher-Order Recovery Factor Structure</i>	<i>50</i>
<i>Incremental Validity of the New Recovery Scales</i>	<i>58</i>
<i>Coping and Recovery.....</i>	<i>62</i>
<i>Recovery and the Job-Demands Resource Model</i>	<i>71</i>
Study 2: Discussion	79
<i>REQ-Expanded Factor Structure.....</i>	<i>79</i>
<i>Incremental Validity of the New Recovery Scales</i>	<i>82</i>
<i>Recovery and Coping.....</i>	<i>85</i>
<i>Recovery and the Job-Demands Resources Model.....</i>	<i>88</i>
<i>Limitations and Future Research.....</i>	<i>89</i>
<i>Conclusion</i>	<i>91</i>
STUDY 3	
Study 3: Introduction	91
<i>The ABLE Program and Recovery.....</i>	<i>93</i>
<i>The Mediating Role of Recovery.....</i>	<i>93</i>
Study 3: Methods	95
<i>Participants.....</i>	<i>95</i>
<i>Procedure.....</i>	<i>96</i>
<i>Measures</i>	<i>96</i>
Study 3: Results.....	99
<i>The ABLE Program Recovery.....</i>	<i>99</i>
<i>The Mediating Role of Recovery.....</i>	<i>109</i>
Study 3: Discussion	113

<i>The ABLE Program and Recovery</i>	114
<i>The Mediating Role of Recovery</i>	115
<i>Limitations and Future Research</i>	116
<i>Conclusion</i>	117
GENERAL DISCUSSION	118
<i>Summary of Study 1, 2, and 3</i>	119
<i>Limitations and Future Research</i>	120
<i>Practical Implications</i>	126
<i>Conclusion</i>	128
References	129
Appendix A	146
Appendix B	148
Appendix C	150
Appendix D	152
Appendix E	155
Appendix F	159
Appendix G	161
Appendix H	164
Appendix I	165
Appendix J	168
Appendix K	170
Appendix L	173
Appendix M	174
Appendix N	177

List of Appendices

A: Focus Group Demographic Information.....	146
B: Activity Sort Task.....	148
C: Item Writing Instructions.....	150
D: Item Sort Task.....	152
E: Item Review.....	155
F: Final Recovery Items.....	159
G: Results from the Principal Components Analysis of Coping Items.....	161
H: Summary of the Hierarchal Regression Analyses Demonstrating the Incremental Prediction of the Existing Recovery Factors Above and Beyond the New Recovery Factors on Study Outcomes.....	164
I: Results from the Principal Components Analysis of Recovery and Coping Subscales.....	165
J: Summary of the Hierarchal Regression Analyses Demonstrating the Incremental Prediction of Coping Subscales Above and Beyond Recovery Variables on Study Outcomes.....	168
K: Summary of the Hierarchal Regression Analyses Demonstrating the Incremental Prediction of Recovery Higher-Order Scales Above and Beyond Coping Variables on Study Outcomes.....	170
L: Confirmatory Factor Analysis for the Ten Factor Model.....	173
M: Examination of the ABLE Treatment Participants and the Wait-List Control Group at Time 1 and Time 2 with Higher-Order Recovery Scales.....	174
N: Examination of the Mediating Effect of Recovery with Higher-Order Recovery Scales.....	177

List of Tables

1.	Qualitative Scale Development Process.....	15
2.	Results of the Item-Sort Task.....	23
3.	Communalities and Pattern matrix for Principal Components Analysis of Recovery Items.....	46
4.	Communalities and Pattern matrix for Principal Components Analysis of Recovery Subscales.....	53
5.	Correlations among Study 2 Variables.....	55
6.	Summary of Hierarchical Regression Analyses Demonstrating the Incremental Prediction of the New Recovery Factors Above and Beyond the Existing Recovery Factors on Study Outcomes.....	61
7.	Communalities and Rotated Component Matrix for the Principal Components Analysis of Recovery and Coping Subscales.....	65
8.	Summary of Hierarchical Regression Analyses Demonstrating the Incremental Prediction of the Recovery Variables Above and Beyond the Coping Variables on Study Outcomes.....	69
9.	Assessing the Evidence for Suppression According to Tabachnick and Fidell's (2001) Criteria.....	75
10.	Summary of the Test of Dependent Correlation Analyses Examining whether Recovery Experiences are More Strongly Related to Motivational Outcomes than Strain Outcomes.....	78
11.	Correlations Among for Time 1 and Time 2 Study Variables.....	101
12.	Summary of Recovery Experience Means and Standard Errors for the ABLE Treatment Participants and the Wait-List Control Group at Time 1 and Time 2.....	105
13.	Summary of Strain and Motivation Means and Standard Errors for the ABLE Treatment Participants and the Wait-List Control Group at Time 1 and Time 2.....	110
14.	Summary of Roy-Bargmann's Stepdown Analysis Results Evaluating the Effect of the Group x Time Interaction on Recovery and Strain Outcomes...	113

List of Figures

1.	Scree Plot for the Principal Component Analysis of Recovery Items.....	45
2.	Scree Plot for the Principal Component Analysis of Recovery Scales.....	52
3.	Scree Plot for the Principal Component Analysis of Recovery and Coping Subscales.....	64
4.	Structural Equation Model Representing the Relationship Between Recovery and Strain and Recovery and Vigor.....	74
5.	Perceived Psychological Detachment Before and After the ABLE program for the Treatment Group and the Wait-List Control Group.....	106
6.	Perceived Relaxation Before and After the ABLE program for the Treatment Group and the Wait-List Control Group.....	106
7.	Perceived Control Before and After the ABLE program for the Treatment Group and the Wait-List Control Group.....	107
8.	Perceived Physical Activity Before and After the ABLE program for the Treatment Group and the Wait-List Control Group.....	107
9.	Perceived Social Affiliation Before and After the ABLE program for the Treatment Group and the Wait-List Control Group.....	108
10.	Perceived Hope/Optimism Before and After the ABLE program for the Treatment Group and the Wait-List Control Group.....	108
11.	Perceived Strain Before and After the ABLE program for the Treatment Group and the Wait-List Control Group.....	111

Acknowledgments

I am delighted to acknowledge several individuals who have been integral to the successful completion of my PhD dissertation. Most importantly, I would like to thank my supervisor, Dr. Arla Day for her dedication to this research and her guidance throughout the dissertation process. In addition, I would like to thank my thesis committee members, Dr. Lori Francis, Dr. E. Kevin Kelloway, and Dr. Patrick McGrath as well as my external examiner Dr. Charlotte Fritz for their insight and valuable feedback. These individuals have all challenged me to think critically about research, statistical, and practical issues relating to my dissertation project and as a result I will be better prepared for future research and applied endeavors.

I would also like to acknowledge the contribution of the faculty and staff in the Department of Psychology. Thank you to my professors: Dr. Victor Catano, Dr. Arla Day, Dr. Lori Francis, Dr. Camilla Holmvall, Dr. Kevin Kelloway, Dr. Catherine Loughlin, and Dr. Debra Gilin Oore for providing me with the knowledge, skills, and confidence to complete a project of this magnitude. Thank you to my colleagues for their advice, encouragement, and their ability to make the most trying days bearable. I would especially like to thank, Brendan, Patrick Horsman, Luc Bourgeois, and Amy Morgan for their help with data collection and the many colleagues who kindly acted as Subject Matter Experts for this research. In addition, I would like to thank Saint Mary's University, the Social Sciences and Humanities Research Council of Canada (SSHRC),

the Canadian Institute of Health Research (CIHR) and the RURAL Centre for their generous financial support.

Finally, I would like to express heartfelt gratitude to my family and friends - especially Mom, Dad, Justin, Jamie, Monique, and most importantly, Michael - for their unwavering understanding, love, and support throughout this journey. All of my successes are because of them.

Understanding how employees unwind after work:

Expanding the construct of “Recovery”

by

Sonya N. M. Stevens

Abstract: Recovery experiences (e.g., psychological detachment, relaxation, mastery, control) have been proposed to work in opposition of the strain process and help employees to unwind and restore their resources (Sonnentag & Bayer, 2005). Although we are beginning to understand how these experiences may help workers to recuperate from job demands, there are still many questions about the construct and the efficacy of recovery that remain to be examined. Therefore, the goals of this program of research were to: (1) explore and potentially expand the domain of recovery experiences; (2) examine the relationship between recovery experiences and related constructs (i.e., coping, strain, burnout, engagement, positive mood); (3) examine the influence of a work-life balance intervention on recovery experiences; and (4) assess whether recovery experiences mediate the impact of the work-life balance intervention on strain and motivational outcomes. This program of research consisted of three studies: Study 1 involved qualitative scale development; Study 2 involved cross-sectional survey data collection; and Study 3 involved the implementation of a recovery intervention and longitudinal survey data collection (i.e., pre-treatment and post-treatment). In Study 1, several recovery experiences (i.e., physical activity, social affiliation, hope/optimism, fun/humour, self-reward) in addition to the original four experiences, were identified through consultation with subject matter experts as being important for recuperation from work stress. New items were created to tap into each of these additional experiences. In Study 2, recovery items factored into the ten hypothesized subscales (i.e., four original recovery experiences and six new recovery experiences). The new recovery experiences demonstrated incremental validity, above and beyond the existing recovery experiences, in the prediction of employee well-being outcomes. Recovery experiences were also distinct from conceptualizations of coping and demonstrated incremental validity, above and beyond coping scales, in the prediction of employee well-being outcomes. In line with job-demands resources theory, recovery experiences tended to be more strongly related to positive mood than to strain outcomes. In Study 3, recovery experiences were positively influenced by a 12-week work-life balance intervention and recovery partially mediated the effects of the intervention on employee strain. This series of studies suggests that recovery is an important construct in occupational health psychology and warrant further empirical attention.

August 12, 2010

Understanding how employees unwind after work:

Expanding the construct of “Recovery”

Balancing work and life in today’s society can be demanding. Recent Canadian estimates suggest that one in four employees work more than 50 hours per week (Duxbury & Higgins, 2003) over 69% of Canadians report being at least slightly stressed at work (Statistics Canada, 2002). Increased reliance on technology (e.g., computers, personal digital assistants) has made employees more accessible to supervisors, coworkers, and clients, and it has increased the prevalence of engaging in work tasks during “non-work” time (Rosen & Weil, 1997). Furthermore, the increased prevalence of dual-earner families (Greenhaus et al., 2001) and eldercare responsibilities (Canadian Index of Well-being, 2010) also has led to increased demands at home. In 2009, it was estimated that more than one in four of employed Canadians have elder care responsibilities and more than one in six employed Canadians have both eldercare and childcare responsibilities (Canadian Index of Well-being, 2010).

These increased demands at both work and home have left Canadians with little time for rest and rejuvenation. In fact, the Canadian Index of Well-being (2010) recently reported that the average amount of time Canadians spend on social and leisure activities on a daily basis has decreased 20% from 1998 to 2005. Consequently, it is not surprising that 25% of Canadians who work for medium to large-sized organizations report high levels of work-life conflict (Duxbury & Higgins, 2003).

These statistics are concerning given the abundance of literature documenting the pervasive negative effects of work-life conflict and occupational stress on employees

and organizations (e.g., Duxbury & Higgins, 2003; Kahn & Byosiore, 1992, Parasuraman & Greenhaus, 1997; Sonnentag, & Frese, 2003). Negative employee outcomes include increased incidence of mental and physical health problems, high levels of perceived stress and burnout (Adams, King & King, 1996; Allen, Herst, Bruck, & Sutton, 2000; Duxbury & Higgins, 2003; Frone, 2003; Kristensen, 1996). Negative work outcomes include decreased job satisfaction, job performance, and organizational commitment, well as increased turnover intentions and absenteeism (Allen et al., 2000). Canada organizations are estimated to lose \$6 billion to \$10 billion per year due to work-life conflict (Duxbury & Higgins, 2003).

Given the criticality of the issue of work-life conflict and occupational stress, there have been numerous calls for research on intervention strategies to help reduce employee stress and strain (e.g., Hurrell, 2005; Kelloway, Hurrell, & Day, 2008). There has been some progress in this area, specifically with regard to research on the efficacy of workplace programs and policies for decreasing stress and increasing well-being (e.g., Sonnentag & Frese, 2003; van der Klink et al., 2001; Hurrell, 2005). Although there has been some research in the recreation and clinical psychology literature (e.g., Beehr, Farmer, Glazer, Gudanowski, & Nair, 2003; Byrne & Byrne, 1993; Lefcourt, 2003; Martin, 2001; Scheier & Carver, 1992; 1993), there has been relatively little organizational research devoted to understanding how non-work activities can improve employee well-being and effectiveness.

Eden, Westman, and colleagues (Eden, 2001; Westman & Eden, 1997; Westman & Etzion, 2001) have examined the effects of rests or respites from work (e.g., vacations) on work stress and burnout. Most of this research suggests that vacations do

have a substantial impact on employee mental health, but only for a short period of time (e.g., 1-4 weeks; de Bloom et al., 2010; Westman & Eden, 1997; Westman & Etzion, 2001). Consequently, if employees only take a vacation once or twice a year, the sustained effects on employee health and well-being may be minimal. Therefore, it may be helpful to understand how the behaviours and practices that employees engage in during daily and weekly respites affect their well-being and health. Recent research, primarily conducted by Sonnentag and colleagues (e.g., Fritz & Sonnentag, 2005, 2006; Sonnentag, 2003, 2005; Sonnentag & Fritz, 2007; Sonnentag & Bayer, 2005; Sonnentag, Binnewies, & Mojza, 2008; Zijlstra & Sonnentag, 2006), has started to explore recovery experiences (i.e., relaxation, mastery, psychological detachment, and control) outside of work that enable employees to recover from work stress and replenish their resources on a daily basis.

Although we are beginning to understand how these experiences may help workers to recuperate from job demands, there are still many questions about the construct and the efficacy of recovery that remain to be examined. Therefore, the goals of this dissertation are to: (1) explore and potentially expand the domain of recovery experiences; (2) examine the relationship between recovery experiences and related constructs (i.e., coping, strain, burnout, engagement, positive mood); (3) examine the influence of a work-life balance intervention on recovery experiences; and (4) assess whether recovery experiences mediate the impact of the work-life balance intervention on strain and motivational outcomes.

Recovery Defined

Sonnentag and colleagues (e.g., Sonnentag & Bayer, 2005; Sonnentag & Fritz, 2007) conceptualized recovery as a “process opposite to the strain process that has been caused by exposure to stressors” (Sonnentag & Bayer, 2005; p.396). That is, recovery is the process of restoring and accumulating resources (e.g., energy, positive mood). Recovery restores positive mood and may ultimately mitigate physical and mental health problems (e.g., Kivimäki et al., 2006; Sonnentag & Bayer, 2005; Sonnentag & Fritz, 2007).

It is important to distinguish the concept of recovery from the closely related concept of respite. Essentially, respite is any time spent away from the work environment and work tasks; common sources of respite include days off, weekends, and vacations (Westman & Eden, 1997). Therefore, individuals may engage in recovery experiences during respite to varying degrees, and these recovery experiences may play an integral role in the restorative process that occurs during times of respite.

The concept of recovery proposed by Sonnentag and Fritz (2007) primarily builds on three theories: (1) the conservation of resources theory (Hobfoll, 1998), (2) the effort-recovery model (Meijman & Mulder, 1998), and (3) the mood regulation literature (e.g., Parkinson & Totterdell, 1999; Thayer, Newman, & McClain, 1994).

Effort-Recovery Theory. One of the basic tenets of the recovery concept stems directly from the effort-recovery model (Meijman & Mulder, 1998). The effort-recovery model essentially posits that expending mental or physical effort causes load reactions (e.g., bad mood, low motivation), which over a prolonged period can lead to negative mental and physical health outcomes (Meijman & Mulder, 1998). However,

mental and physical resources will return to their baseline levels when effort is discontinued and these resources are allowed to rest. Drawing on this theory, Sonnentag and Fritz (2007) posited that to recover from work stress, it is important that the mental and physical resources that are activated during work time are no longer activated during non-work time. That is, one would expect that individuals should engage in recovery activities that do not use the same resources as those used at work. For example, an employee who engages in physical labour all day, theoretically should rest his/her physical resources and engage in recovery activities that do not involve physical activity.

Conservation of Resources Theory. Another basic tenet draws on the conservation of resources theory (Hobfoll, 1998). Conservation of resources theory posits that individuals are motivated to maintain and build personal resources and that stress occurs when these resources are threatened. Drawing on this theory, Sonnentag and Fritz (2007) posited that engaging in activities that result in the accumulation of new resources, such as energy, feelings of control, or positive mood will also promote recovery.

Mood-Regulation Theory. In developing the concept of recovery, Sonnentag and Fritz (2007) also incorporated the mood-regulation literature. They argued that the recovery process should repair negative moods brought on by work stress. Therefore, recovery experiences may be similar to the experiences that are necessary for mood-regulation. According to mood-regulation theories, there are two types of strategies to manage mood. Engagement strategies involve dealing with the problem or stressor directly (Parkinson & Totterdell, 1999; Thayer et al., 1994). Diversionary strategies

improve mood by allowing the individual to disengage from the problem or stressor (Parkinson & Totterdell, 1999). Diversionary strategies that are thought to promote positive affect include: (1) avoidance of the problem; (2) relaxation-oriented distraction; and (3) mastery-oriented distraction.

Given that diversionary mood-management strategies involve disengagement from the stressor, they may also provide individuals with the ability to restore mental and physical resources. Accordingly, Sonnentag and Fritz (2007) drew on the Parkinson and Totterdale's (1999) diversionary mood-management theory to develop three of their four recovery experiences: (1) Psychological detachment is the extent to which individuals forget about their work experiences and "switch-off mentally" during non-work time (Sonnentag & Bayer, 2005; p. 393); (2) Relaxation is the extent to which individuals engage in pleasurable, low-stimulation activities (Sonnentag & Fritz, 2007). Relaxation can result from purposeful activities, such as progressive muscle relaxation, or involvement in regular everyday activities, such as watching a movie or taking a bath; and (3) Mastery is the extent to which individuals engage in non-work activities that are challenging or promote learning and growth (Sonnentag & Fritz, 2007). Mastery activities provide individuals with non-work experiences that contribute to self-efficacy and perceptions of competence. Sonnentag and Fritz's (2007) fourth recovery experience stems from Hobfoll's (1989) conservation of resources theory, which identifies control as an important external resource that enables one to accrue internal resources (e.g., energy). Sonnentag and Fritz (2007) defined control as the extent to which individuals perceive that they are in charge of, and have control over, their non-work time.

Recent research has demonstrated that these recovery experiences are positively related to many employee health and well-being outcomes. Recovery experiences have been positively related to outcomes such as positive mood, job engagement, and life satisfaction and negatively related to outcomes such as burnout, depressive symptoms, sleep problems, fatigue, and general health complaints (e.g., Kuhnel, Sonnentag, & Westman, 2008; Siltalooppi, Kinnunen, & Feldt, 2009; Sonnentag & Bayer, 2005; Sonnentag & Fritz, 2007; Sonnentag, Kuttler, & Fritz, 2010; Sonnentag, Mojza, Binneiwes, & Scholl, 2008).

Two other theories that have gained popularity in recent years also lend credence to the conceptualization of recovery experiences and their link to positive well-being outcomes. First, Fredrickson's (2006) broaden-and-build theory suggests that positive emotions promote psychological resilience and gains in personal resources, which in turn, result in greater long-term psychological and physiological well-being. To the extent that recovery experiences promote the experience of positive emotions and the restoration of positive resources, they should also be related to psychological and physiological well-being outcomes.

Second, Baumeister (2001) suggested that individuals have a limited resource of energy, and activities involved in executive functions (e.g., making decisions, taking responsibility, exerting self-control, taking initiative) draw on this resource. Ego depletion occurs when this resource is continually tapped without being restored. Ego depletion is associated with reductions in performance on executive functioning activities. Accordingly, it is likely that work activities draw on an individual's resources and, without rest or replenishment, may result in ego depletion.

Consistent with the effort-recovery model (Meijman & Mulder, 1998), Baumeister (2001) has found that rest of executive functioning activities can result in restoration of an individual's energy resource. Furthermore, recent research has demonstrated that positive emotion may counteract ego depletion, perhaps even better than rest (Tice, Baumeister, Shmueli, & Muraven, 2007). Therefore, engaging in recovery experiences that no longer tap into executive functioning resources and/or generate positive emotions may allow individuals to restore resources that are integral to optimal executive functioning.

Measurement of Recovery Experiences

Sonnentag and Fritz (2007) developed the Recovery Experiences Questionnaire (REQ) to measure these recovery experiences and they have found preliminary evidence supporting the construct validity of the REQ's four-factor conceptualization of recovery. This scale clusters into four reliable factors and relates in expected ways to several constructs (e.g., coping, personality, psychological well-being; Sonnentag & Fritz, 2007). Although the scale was originally developed in German, a component of this scale has been used in English with a North American sample (Fritz, Yankelevich, Zarubin, Barger, in press).

Summary

Increased life and work commitments have made it more difficult for employees to balance demands. Consequently, employees are spending more time juggling demands and less time engaging in restorative leisure activities (Canadian Index of Well-being, 2010). Not surprisingly, in recent years there has been an increased prevalence in work-life conflict and occupational stress (Duxbury & Higgins,

2003; Statistics Canada, 2002), which can result in negative outcomes for employees (e.g., mental and physical health problems; Duxbury & Higgins, 2003; Kahn & Byosiére, 1992, Parasuraman & Greenhaus, 1997; Sonnentag, & Frese, 2003) and organizations (e.g., decreased work engagement; employee withdrawal; Allen et al., 2000).

Increasing recovery experience during non-work time may be a practical and attainable approach to preventing employee strain and promoting employee well-being. Indeed, initial research provides support for the rejuvenating effects of recovery and has linked recovery experiences to employee health and motivation (e.g., Kuhnel, Sonnentag, & Westman, 2008; Siltaloppi et al., 2009; Sonnentag & Fritz, 2007; Sonnentag et al., 2010; Sonnentag et al., 2008). Consequently, this relatively new construct warrants further development. Therefore, the main objective of this research program was to explore and expand further the construct of recovery. Specifically, the goals of this dissertation were to examine whether there are additional recovery experiences that should be included in the domain of recovery, examine the construct validity of the existing and new recovery scales, and assess the impact of a work-life balance intervention on recovery experiences.

The current research addresses these research goals in three studies. Study 1 involves qualitative scale development, using content validity procedures to examine and potentially expand the domain of the current recovery questionnaire in use (Sonnentag & Fritz, 2007). Study 2 involves using cross-sectional survey data (i.e., at Time 1: September, 2009) to gather evidence of the construct validity of the expanded recovery questionnaire. That is, Study 2 survey data were used to validate the new and

existing recovery scales, to differentiate coping from recovery, and to examine the relationship between recovery and employee well-being outcomes. Finally, in Study 3, a longitudinal design was used to examine recovery experiences before (i.e., Time 1; September, 2009) and after (i.e., Time 2; December, 2009) an intervention program. These data were used to evaluate the extent to which recovery experiences could be increased through the intervention, as well as the extent to which recovery experiences may mediate the relationship between participation in the intervention and employee well-being outcomes.

STUDY 1

Despite the research on the current recovery structure, the underlying models upon which recovery is based (e.g., Parkinson & Totterdell, 1999; Thayer et al., 1994) suggest that there may be additional recovery experiences that would enhance our understanding of employee resilience. Indeed, Sonnentag and colleagues have suggested that there may be more than four recovery experiences. Sonnentag and Fritz (2007) suggested that pleasurable experiences and social connections may be important to recovery. In addition, Sonnentag (2001) and Sonnentag and Niessen (2008) suggested that leisure activities, such as physical activities (e.g., exercise and sport) and social activities (e.g., spending time with friends and family), may contribute to recovery. In fact, participants in Sonnentag and Niessen's (2008) study reported that the recovery derived from social activities and physical activities was equal to or greater than recovery derived from low-effort activities. Furthermore, recent publications have framed non-work activities such as community experiences (i.e., cultivating relationships; Mojza, Lorenz, Sonnentag, & Binnewies, 2010) and sports

(Sonnentag & Jelden, 2009) as recuperative. Therefore, it may be valuable to examine factors that can add to the existing recovery construct.

Expanding the Construct of Recovery

The general health and well-being literature suggests that various states and experiences such as social interaction, exercise and physical activity, humour, and optimism contribute to positive mental and physical health (e.g., Beehr, Farmer, Glazer, Gudanowski, & Nair, 2003; Byrne & Byrne, 1993; Lefcourt, 2003; Martin, 2001; Scheier & Carver, 1992; 1993). A closer look at original mood-regulation studies, on which the current conceptualization of recovery was based, emphasizes the relevance of these experiences as well. For example, Parkinson and Totterdell (1999) conducted a cluster analysis of affect-regulation strategies that clearly illustrated that individuals tend to rely on behavioural strategies, such as humour, exercise, and social affiliation, and cognitive strategies, such as being optimistic and thinking about positively about the future, for improving mood. Furthermore, studies that have evaluated the efficacy of various mood-regulation strategies have found social activities and exercise are among the most effective at improving mood (Gallup & Castelli, 1989; Parker & Brown, 1982; Riperre, 1977; Thayer et al., 1994).

It is notable that the recovery experiences identified by Sonnentag and Fritz (2007) do not include any high-energy experiences (although mastery may include high energy, this characteristic is not explicit in its definition). Thayer's (1978, 1989) mood regulation theory states that positive mood is generated by decreasing tension *and* increasing energy. Therefore, activities that not only reduce tension, but also generate energy should contribute to positive recovery outcomes. Consistent with this idea,

Thayer and colleagues (Thayer et al., 1993; 1994) posited that mood-related benefits of moderate exercise are likely due to exercises' ability to increase energy. Drawing on these studies, several recovery experiences may add incremental value to the current conceptualization of recovery. Specifically, experiencing physical activity, social affiliation, fun or humour, and hope or optimism during non-work time may have recuperative benefits.

Physical Activity. Pleasurable activities that involve high activation, such as exercising or playing sports, may be valuable recovery experiences. Exercise is related to increases in positive affectivity and feelings of energy as well as decreased in fatigue, depression, and anxiety (Chu, Buckworth, Kirby, & Emery, 2009; Petruzzello, Landers, Hatfield, Kubitz & Salazar, 1991; Puetz, O'Connor, & Dishman, 2006; White, Kendrick, & Yardley, 2009). Playing sports is also related to enhanced well-being (Byrne & Byrne, 1993) and employees perceive it as being an effective strategy for recovery from work stress (Sonnentag & Jelden, 2009). Recent recovery-related research also suggests that time spent on physical activities during non-work time is associated with well-being and mood (Sonnentag, 2001; Sonnentag & Bayer, 2005).

Social Affiliation. Socializing and affiliating with other people may be a beneficial recovery experience. Indeed, social activity during off-work time tends to promote employee health and job performance after the weekend (Fritz & Sonnentag, 2005; Sonnentag, 2001), suggesting that social activities can play a key role in the recovery process. Furthermore, there is a vast literature demonstrating the relationship between social support and positive well-being and there is some support for efficacy of social support for buffering the negative effects of stress, especially for women

(Beehr et al., 2003; Greenglass, 2002; Luszczynska & Cieslak, 2005; Taylor, Klein, Lewis, Gruenewald, Gurung, & Updegraff, 2000; Terry, Neilsen & Perchard, 1993).

Experience of Fun/Humour. Engaging in activities that are enjoyable or that one finds amusing and humorous could also promote positive recovery experiences. In fact, engaging in humorous behaviours and/or activities has been related to well-being (e.g., Herzog & Strevey, 2008), positive mood, (Lefcourt, 2003) and reduced levels of anxiety and depression (Houston, McKee, Carroll, & Marsh, 1998). There has been some support for the moderating effect of humour, such that humour buffers the negative impact of stressors on mental and physical outcomes (Lefcourt, 2003; Martin, 2001).

Hope/Optimism. Finally, having a sense of optimism and hope may also be a beneficial recovery experience. Parkinson and Totterdell (1999) noted that cognitive diversion strategies for mood-regulation tend to include optimistic and hopeful thoughts such as “thinking of what I’ll do when I get free time”, “thinking about things that make me happy”, and “thinking about a future event I am looking forward to” (p. 292). Both hope and optimism are related to psychological adjustment and positive physical health outcomes (Scheier & Carver, 1992; 1993; Snyder, 2002). Specifically, optimism has been associated with positive changes in the immune system (Segerstrom, Taylor, Kemeny & Fahey, 1998) and prolonged lifespan (Seligman, 2000). Furthermore, Luthans and colleagues (e.g., Luthans, Avey, Avolio, Norman, & Combs, 2006; Luthans, Avolio, & Avey, 2007) proposed that hope and optimism are two components of an individual’s psychological capital that contribute to positive work-related outcomes such as job satisfaction and performance.

Despite the research support for the four recovery experiences proposed by Sonnentag and Fritz (2007), these other experiences (e.g., physical activity, social affiliation, fun/humour, and hope/optimism) may be necessary to understand the recovery process more fully. We can ensure that domain of recovery experiences is fully sampled by using content validation strategies (Crocker & Algina, 1986; Nunnally & Bernstein, 1994). These validation strategies include consulting the literature on the construct, seeking guidance from subject matter experts, and creating additional items to tap into all aspects of the content domain (Crocker & Algina, 1986). Therefore, the goal of Study 1 was to examine the current recovery conceptualization (i.e., psychological detachment, relaxation, mastery, control) and potentially expand the measure of recovery through consultation with subject matter experts.

Study 1: Methods

I used a five-step test development process based on standard development procedures (e.g., Crocker & Algina, 1986; Hinkin, 1998; Nunnally & Bernstein, 1994) to examine and potentially to expand the current Recovery Experiences Questionnaire (Sonnentag & Fritz, 2007). This development process included: (1) conducting focus groups to identify recovery activities; (2) using subject matter experts in an activity sorting task; (3) engaging trained subject matter experts to write new items; (4) using subject matter experts in an item sort-task; and (5) conducting an item review task (see Table 1 for an overview of these activities; see Appendix A-E for more information about each step). The first step involved a convenience sample of 33 employees from a wide range of occupations, and each of the other steps included up to 5 subject matter experts. Overall, five of the subject matter experts participated in multiple steps: one

was used in both the focus group (step 1) and item writing activities (step 3) and the other four were used in both the activity sort task (step 2) and item writing (step 3). All of the other subject matter experts were only involved in one step.

Table 1.

Qualitative Scale Development Process.

Scale Development Step	Sample	Sample Description	Appendix
<p><i>(1) Activity Identification Focus Groups</i></p> <p>Participants brainstormed about the things they do to recover from work stress both independently and as a group.</p>	33	<p>21 women; 12 men</p> <p>Mean Age: 32.41 (Range: 21-61)</p> <p>Wide range of ages and occupations (e.g., accountant, secretary, auto technician, chiropractor, IT manager)</p>	A
<p><i>(2) Activity Sort Task</i></p> <p>SMEs were given a list of recovery-related activities and asked to sort them into the existing recovery categories and the new proposed recovery categories, noting any cross loading or missing categories.</p>	5	<p>3 men; 2 women</p> <p>4 graduate students and 1 undergraduate student in I/O Psychology with knowledge of the recovery literature.</p>	B
<p><i>(3) Item Writing</i></p> <p>SMEs were given definitions of the new proposed recovery categories and asked to write 5-7 items per category.</p>	5	<p>2 women; 3 men</p> <p>4 graduate students and 1 faculty member in I/O Psychology with knowledge of the recovery literature.</p>	C
<p><i>(4) Item Sort Task</i></p> <p>SMEs were given a list of both existing and new recovery items and asked to sort them into the existing recovery categories and the new proposed recovery categories, noting any cross loading or missing categories.</p>	4	<p>2 women; 2 men</p> <p>3 graduate students in I/O Psychology and 1 I/O Psychology practitioner with expertise in occupational health.</p>	D
<p><i>(5) Item Review</i></p> <p>SMEs were asked to review all of the new items for readability, clarity, grammar, potential bias, relevance and redundancy.</p>	5	<p>3 women; 2 men</p> <p>2 I/O Psychology practitioners and 3 faculty members with expertise in occupational health.</p>	E

Study 1: Results

(1) Activity Identification Focus Groups. Eight focus groups were asked to generate a comprehensive list of activities and strategies that they used on a daily basis to unwind or recover after work (see Appendix A for the procedures and participant instructions). The focus groups included an average of four people and ranged in size from two to ten participants (N=33 participants; 21 women; 12 men). A convenience sample was used, but participants were recruited to ensure diversity in gender, age, and occupation. The average age of participants was 32.41 years (range: 21 to 61 years). Most participants were employed full-time and worked an average of 38.42 hours (range: 15 to 60 hours) in a wide range of occupations (e.g., IT manager, secretary, floral manager, auto technician, accountant, chiropractor, research consultant, social worker).

The focus group participants created a list of their own recovery activities. After combining duplicate activities, there were a total of 45 activities (e.g., watch TV; take a bath; play an instrument; make a “to-do list”; exercise; have sex; spend time with family/friends; events or activities (parties, outings); laugh; go out on the town; see Appendix B). After identifying these activities, the participants were asked to group similar activities into categories. Eight categories emerged across the groups: psychological detachment; relaxation, mastery, control, physical activity, social affiliation, fun/humour, and hope/optimism.

These categories were relatively consistent across groups and represented the existing and proposed recovery categories. Specifically, five themes (i.e., psychological detachment, relaxation, mastery, physical activity and social affiliation) were identified

in all eight focus groups (i.e., 8 of the 8 focus groups; 100%). Fun/humour emerged as a theme in 62.5% of the focus groups (5 of the 8 focus groups). Control was identified as a theme in 50% of the focus groups (4 of the 8 focus groups) and hope/optimism was identified as a theme in 37.5% of the focus groups (3 of the 8 focus groups).

(2) Activity Sort-Task. Although the specific activities were not intended to be used in the final recovery measure, this sort task was used to confirm the nine themes with an independent sample of five subject matter experts. The subject matter experts included three PhD students (1 female; 2 males), one male MSc student, and one female undergraduate student who were all trained in Industrial/Organizational Psychology and familiar with the construct of recovery as defined by Sonnentag and her colleagues. These subject matter experts were provided with definitions of each of the proposed recovery categories and were asked to sort each of the 45 activities into one of the eight recovery categories (see Appendix B). Subject matter experts were encouraged to indicate if any of the activities were associated with more than one recovery category (i.e., cross-loaded on multiple categories) or if any of the activities was not related to any of the categories provided. When subject matter experts indicated that a given activity was associated with more than one category, they were asked to identify the category was the most representative of that activity. Subject matter experts were also given the opportunity to propose additional categories.

The purpose of this sort-task was to confirm that there were no categories that were missing or redundant. Each of the five subject matter experts identified at least two activities for each of the eight recovery categories. Although subject matter experts found that many of the activities could be associated with more than one category, for

the most part, they were also able to identify the recovery category that was the most representative of each activity. In fact, all of the subject matter experts selected at least one activity as “most representative” for all eight of the recovery categories, with one exception: One of the five subject matter experts did not have an activity listed as “most representative” for the hope/optimism category.

Furthermore, at least 80% of the sample (i.e., at least 4 out of 5 of the subject matter experts) sorted 36 of the 45 activities into the theoretically relevant categories (i.e., the category that was related to the activity during the focus group discussions). The activities for which there was less than 80% agreement were: “blog”; “job hunt”; “go out on the town”; “spend time with a pet”; go shopping/buy things”; “get a haircut”; “fix things”; and “check things off the ‘to-do’ list.” It is not surprising that there was not high inter-rater agreement for all activities given that there may be some individual variability in what individuals find relaxing, empowering, or fun. What is more important is that each of the raters identified activities that tapped into each of the recovery categories.

These results confirmed that all of the recovery categories generated in the focus groups were appropriate for grouping the activities that were reported. However, one additional recovery category, self-reward, was proposed by one subject matter expert. Through discussions with all subject matter experts, the “self-reward” category was defined as “treating oneself to well-deserved rewards” and the category was added to the proposed list of recovery experiences. Sample activities include going shopping/buying things and getting a massage or spa treatment.

(3) Item Writing. A group of five subject matter experts (2 women; 3 men) were recruited to write five to seven items for each of the five new proposed recovery categories (i.e., physical activity, social affiliation, fun/humour, hope/optimism, and self-reward). The item writers consisted of three PhD students and one MSc student, and one faculty member in Industrial/Organizational Psychology who were all familiar with the construct of recovery as defined by Sonnentag and her colleagues (e.g., Sonnentag & Fritz, 2007). All SMEs had previous experience with scale development and item writing. Definitions of the five new recovery categories were provided (see Appendix C). All new items were merged with the author's own proposed items; after unclear and redundant items were deleted 33 new items remained, resulting in between four and eight items per recovery category (see Table 2 for a list of items).

During the focus group sessions participants mentioned “getting organized” or “making to-do lists” as part of their recovery process. When asked how this helped them “recover” or feel better after work, they stated that it gave them a sense of control. However, because the control items proposed by Sonnentag and Fritz (2007) do not seem to capture these planning-related experiences, two planning-related control items were also included (i.e., I get organized (e.g., make lists, tidy up); I get things checked off my “to-do” list).

(4) Item Sort-Task. Another group of four subject matter experts (2 women; 2 men) were recruited to complete an item sort-task (see Appendix D and Table 2). The sample consisted of one MSc student and two PhD students in Industrial/Organizational Psychology programs as well as one Industrial/Organizational Psychology practitioner (with a MSc degree). All subject matter experts had expertise

in the area of occupational health. These subject matter experts were asked to review all of the 49 items (i.e., 12 original items and 33 new items) for clarity and sort the items into the nine proposed recovery categories (i.e., psychological detachment, relaxation, mastery, control, social affiliation, physical release, fun/humour, hope/optimism, and self-reward). Subject matter experts were encouraged to sort the items into all applicable categories, such that it was possible for them to place one item into multiple categories, or into none of the categories. Subject matter experts were also given the opportunity to propose additional categories.

The results of the sort-task are presented in Table 2. For clarity, this matrix does not include cross-loadings. Overall, there was good inter-rater reliability. Because one of the four raters did not sort the 14 final items, inter-rater reliability was computed in two ways to establish lower and upper range values. First, I computed the kappa coefficient where the missing responses were assumed to be inconsistent with the majority response: $\kappa=.74$. Therefore, this kappa value is a conservative estimate of the actual inter-rater reliability. Second, I also computed the kappa coefficient where the missing responses were assumed to be consistent with the majority response: $\kappa=.90$. Therefore, this kappa value is a more liberal estimate of the actual inter-rater reliability.

All but three of the 33 items were sorted into their theoretically relevant recovery categories by at least 75% of subject matter experts (i.e., three out of four subject matter experts). Two of the items that received less than 75% subject matter expert agreement were the extra “planning-related” control items (i.e., “I get organized (e.g., make lists, tidy up)”; “I get things checked off my “to-do” list”). However,

because these items were consistently mentioned in the focus groups, they were kept for the item review. However, because subject matter experts indicated that these two items did not fit into the existing definition of control, the item reviewers in step 5 were asked to review these items in greater detail to assess their suitability. Another item that received less than 75% agreement was a hope/optimism item (i.e., “I plan fun activities, trips, or events”). Subject matter experts noted that the word “fun” lead them to sort this item into the fun/humour category. Therefore, the word “fun” was removed from the item and it was included in the item review.

Based on the qualitative feedback from subject matter experts several other changes were made: Five items were deleted because of redundancy or lack of clarity (i.e., “I talk about problems with others”; “I participate in activities at my synagogue or church”; “I enjoy being around people who make me laugh”; “I get excited about my future”; and “I buy things I really want”). Two items were merged because of similar content (i.e., “I think or how I will spend my weekend” and “I think of how I will spend my vacation”). Two items were added to expand the content domain (i.e., “I exercise or go to the gym” and “I indulge in guilty pleasures”). At the end of this phase, there were a total of 29 items: 27 new items tapping the five new categories and the two additional “control” items that were retained for further review (see Appendix E for a list of items).

(5) Item Review. In the fifth and final step of the scale development process, these 29 new items were distributed to a group of five subject matter experts (3 women; 2 men) to review for readability, clarity, grammar, potential bias, relevance and redundancy (see Appendix E). The item review panel consisted of two

Industrial/Organizational Psychology practitioners (with MSc degrees) and three Industrial/Organizational Psychology faculty members who specialize in occupational health.

Based on subject matter expert feedback, four more items were eliminated because they were redundant or unclear (i.e., “I exercise or go to the gym”; “I think of how I will spend my weekend or my next vacation”; “I indulge in guilty pleasures”; “I do things for myself”). One item was added to expand the content domain of the self-reward category (i.e., “I buy things I really want”). Finally, a few items were reworded to further enhance clarity. The final recovery scale (i.e., the Recovery Experiences Questionnaire-Expanded) consisted of the 16 existing items, two additional control items, and 24 new items that represented the five new recovery categories (see Appendix F).

Table 2.

Results of the Item-Sort Task. (N=4)¹

During my time after work....	Detach	Relaxation	Mastery	Control	Self-reward	Physical activity	Social Affiliation	Hope/Optimism	Fun/Excitement	Other
I forget about work.*	4									
I don't think about work at all.*	4									
I distance myself from my work.*	4									
I get a break from the demands of work.*	3									1
I kick back and relax.*		3								
I do relaxing things.*		4								1
I use the time to relax.*		4								
I take time for leisure.*		4								
I learn new things.*			4							
I seek out intellectual challenges.*			4							
I do things that challenge me.*			4							
I do something to broaden my horizons.*			4							
I feel like I can decide for myself what to do.				4						
I decide my own schedule.*				4						
I determine for myself how I will spend my time.*				4						
I take care of things the way that I want them done.*				4						
I get organized (e.g., make lists, tidy up)*				2						2
I get things checked off my "to-do" list.*				2						2
I spend time quality time with my friends and/or family.*						4				
I socialize with others.*										
I keep in touch with friends and/or family (e.g., phone, facebook).*						4				
I spend time with people I care about.*						4				
I talk about problems with others.						4				
I participate in activities at my church or synagogue.						4				

Continued on next page.

During my time after work....	Detach	Relaxation	Mastery	Control	Self-reward	Physical activity	Social Affiliation	Hope/Optimism	Fun/Excitement	Other
I do something that is physically demanding (e.g., housework). **							4			
I engage in activities that increase my heart rate.*							4			
I engage in physical activity.*							4			
I participate in sports or recreational activities.*							4			
I do things that require physical exertion.*							4			
I plan fun activities, trips, or events**								1	3	
I daydream about my future.*								4		
I get excited about my future.								4		
I think of how I will spend my weekend.								3		
I think of how I will spend my next vacation.								3		
I gather information about things that I aspire to achieve or attain in the future (e.g., dream job, new house, vacation). **								3		
I like to think about all the positive things that are going to happen this week**								3		
I look forward to upcoming events.*								3	3	
I do things that make me laugh.*									3	
I do things that are fun.*									3	
I do activities that I find exciting.*									3	
I try to see the humour in situations.*									1	2
I enjoy being around people who make me laugh.							1		2	
I joke around.*									2	1
I spend some quality "me time."**					3					
I reward myself with something special.*					3					
I take time to do the things that I enjoy.					3					
I pamper myself.*					3					
I do things for myself.					3					
I buy things that I really want.*					3					

¹Please note that one rater did not complete the final 14 items.

*Indicates that the item was retained in the final scale; ** Indicates the item was modified, but retained in the final scale.

Study 1: Discussion

Although several researchers have suggested that other experiences and non-work activities may contribute to recovery from work stress (e.g., Sonnentag, 2001; Sonnentag & Fritz, 2007; Sonnentag & Niessen, 2008), no study has thoroughly examined whether these experiences and activities should be formally included in the recovery domain. Therefore, the aim of Study 1 was to explore the domain of recovery, use content validation strategies to identify and develop additional recovery subscales, and develop the Recovery Experiences Questionnaire-Expanded (REQ-Expanded).

Qualitative consultation with subject matter experts supported the presence of four existing recovery subscales: The psychological detachment, relaxation, and mastery categories emerged in all focus groups and the control category emerged in half of the focus groups. Five new recovery experiences also emerged in this study. These new recovery categories included: physical activity, social affiliation, fun/humour, hope/optimism, and self-reward. Subscales for each of these categories were developed in consultation with several groups of subject matter experts and were included in the REQ-Expanded. Two additional items theorized to tap into control (i.e., “planning” activities) were identified in several focus groups. Because these items were different from the existing control items, they were added to the REQ-Expanded as well.

Although, the category of self-reward was not identified explicitly at the outset of this study, there is some support in the literature for this concept. For example, Morris and Reilly (1987) found that self-reward was a popular approach to mood-regulation. Parkinson and Totterdell (1999) noted that behavioural strategies for mood-

regulation include self-reward activities such as “treat myself”, “go to a favorite place”, and “go shopping” (p. 291).

Therefore, Study 1 extends the current literature by proposing several additional recovery categories and associated measurement scales. Several of these new recovery categories have been shown to be associated with health and well-being. Including them in the concept of recovery allows for a more comprehensive measure of recovery experiences during non-work time.

Limitations & Future Research

Although efforts were made to ensure a diverse sample for the activity identification focus groups, there was a higher proportion of white-collar professions represented (e.g., management, professional service, administrative). There were several focus group members who had jobs involving manual labour (e.g., auto-technician) and these individuals did tend to report engaging in similar recovery activities to other focus group members. However, it may be advantageous to confirm these results with a sample that includes a larger proportion of blue-collar works.

In the present study, the original Sonnentag and Fritz (2007) recovery subscales were not modified so as to allow direct comparisons with past research and to assess clearly the value of the new recovery subscales. Although these scales tend to demonstrate excellent psychometric properties (e.g., Sonnentag & Fritz, 2007), during the scale development process, there were several suggestions for modifying the existing scale items that may be addressed in the future. For example, one subject matter expert noted that psychological detachment scale combined both passive and active detachment. That is, “I distance myself from work” seems to be active

disengagement, whereas “I get a break from the demands of work” may be considered more passive detachment. However, past research (e.g., Sonnentag & Fritz, 2007) suggests that the psychological detachment items consistently cluster together. Therefore, people may not be able to differentiate between active and passive detachment. Future research may consider clarifying both the theory and the item wording pertaining to psychological detachment.

Additionally, it is not clear from the current mastery items whether mastery experiences are meant to be non-work experiences. Several individuals wondered whether they should include work-related activities when assessing their mastery experiences (even when the point of reference was for experiences during non-work time). Finally, several subject matter experts reported that control items were repetitive. Future research may seek to reduce the number of items used in this scale or more broadly sample the control domain by adding additional items.

This study provides evidence to support the content validity of the REQ-Expanded. It is also important to demonstrate the construct validity of this scale. Therefore, Study 2 was designed to examine the factor structure of this revised scale and the relationships between the REQ-Expanded and other employee well-being constructs (e.g., coping, strain, burnout, engagement, positive mood).

STUDY 2

The goal of Study 2 was to examine further the validity of REQ-Expanded. Several strategies can be used to establish the validity of a test. Evidence based on the test content, evidence based on internal structure, and evidence based on relations with other variables all lend credence to the validity of a test (AERA, APA, & NCME, 1999; Crocker & Algina, 1986; Cronbach, 1971). In Study 1, I ensured that the recovery items adequately sample the domain of recovery experiences through the scale development process (i.e., through content validation strategies, Crocker & Algina, 1986). However, it is also important to examine the test's theorized internal structure and its relationship with other constructs (i.e., through construct validation strategies; Crocker & Algina, 1986). More specifically, evidence for validity is provided when a test comprises the same number of factors as the theoretical construct it is intended to measure, and when a test correlates with theoretically related constructs (i.e., convergent evidence; AERA, APA, & NCME, 1999; Nunnally & Bernstein, 1994).

Therefore, I specifically wanted to examine the factor structure and internal reliability of the REQ-Expanded and examine the relationships between the REQ-Expanded and other related constructs (e.g., coping, strain, burnout, engagement, positive mood). If the REQ-Expanded is a valid measure, it should have an internal structure similar to the nine-factor model that emerged during the scale development process in Study 1. That is, the REQ-Expanded should cluster into nine reliable factors. Therefore, I hypothesize that:

Hypothesis #1: The REQ-Expanded will demonstrate construct validity, such that the four original scales (i.e., psychological detachment, relaxation, mastery, control) and the five new proposed scales (i.e., physical activity, social affiliation, fun/humour, hope/optimism, self-reward) will cluster into distinct, reliable factors.

Furthermore, if the REQ-Expanded is a valid measure, it should be related to other theoretically associated constructs with which it is theoretically associated (i.e., convergent validity evidence). To assess convergent validity in this study, I examined the relationship between the REQ-Expanded and several other constructs. Given that the existing REQ subscales related both to strain (e.g., general health: Sonnentag & Fritz, 2007; burnout: Sonnentag & Fritz, 2007; Siltaloppi, Kinnunen, & Feldt, 2009) and to motivational outcomes (e.g., positive mood: Sonnentag, Mojza, Binneiwes, & Scholl, 2008; engagement: Kühnel, Sonnentag, & Westman, 2009; Siltaloppi et al., 2009; Sonnentag, Kuttler, & Fritz, 2010), the new recovery subscales should also be related to strain and motivational outcomes. In addition, for the new recovery subscales to be useful, it is important that they predict strain and motivational outcomes above and beyond the existing scales (i.e., incremental validity). Therefore, I hypothesize that:

Hypothesis #2a: The REQ-Expanded will be related to strain and motivational outcomes.

Hypothesis #2b: The new recovery subscales will account for additional variance in strain and motivational outcomes, above and beyond the existing four recovery subscales.

Recovery and Coping

One criticism of recovery as a “new” construct is its potential similarity to the concept of coping. These constructs both address how individuals deal with stress and strain in hopes of improving their health and well-being. Accordingly, it is important to distinguish between these two constructs and understand their relationship. Lazarus and colleagues (Lazarus, 1974; Lazarus & Folkman, 1984) identified two main categories of coping behaviours: problem-focused coping and emotion-focused coping. Problem-focused coping involves strategies for dealing with the stressor or problem directly (e.g., talking to one’s supervisor), whereas emotion-focused coping involves strategies that make one feel better (e.g., practicing deep breathing and/or muscle relaxation). Other coping categories also have been suggested. For example, cognitive coping involves changing the way one thinks about the situation (e.g., reappraisal; Moos & Schaefer, 1993). Furthermore, Carver, Scheier, and Weintraub (1989) suggested that several coping strategies can be classified as dysfunctional or maladaptive (e.g., focusing on and venting of emotions, behavioural disengagement, and helplessness).

Despite perceived conceptual similarities, however, Sonnentag and Fritz (2007) found that the statistical relationship among recovery experiences and coping were weak. The authors examined the relationships between their four recovery experiences (i.e., psychological detachment, relaxation, mastery, and control) and nine subscales from the German version of Carver’s (1989) COPE scale (Vollrath & Torgersen, 2000). Only 10 of the 36 relationships examined (28%) were significant, and even these significant correlations were low to moderate. Correlations between the recovery experiences and emotion-focused coping ranged from $-.19$ to $.33$; correlations between

the recovery experiences and problem-focused coping ranged from $-.07$ to $.33$; and correlations between the recovery experiences and “other” types of coping (i.e., focus on emotions, behavioural disengagement, and mental disengagement) ranged from $-.14$ to $.22$. Specifically, emotional social support, an emotion-focused coping strategy characterized by talking to others about feelings, was related to control, relaxation, and psychological detachment. Interestingly, mental disengagement, a coping strategy characterized by distracting oneself by thinking about other things or engaging in other activities, was not related to psychological disengagement (Sonnentag & Fritz, 2007).

Therefore, despite a small conceptual overlap, coping and recovery seem to be relatively distinct constructs. However, to date, the relationship between recovery and Carver et al.’s (1989) entire measure has not been examined. Furthermore, it is important to demonstrate further that the coping and recovery constructs are indeed distinct, especially with the newly developed recovery scales. Therefore, I hypothesize that:

Hypothesis # 3: When the recovery and coping subscales are factor analyzed jointly, they will factor onto distinct recovery and coping factors.

Furthermore, no study has tested the validity of recovery experiences in predicting employee strain and motivational outcomes above and beyond the effects of coping strategies. This step is important to distinguish these two similar constructs and to provide evidence to support the validity of recovery. Therefore, I hypothesize that:

Hypothesis #4: The recovery subscales will account for additional variance in employee strain and motivational outcomes above and beyond the variance explained by coping subscales.

Recovery and the Job-Demands Resource Model

The extant recovery literature provides some insight into the relationship between recovery experiences and employee stress and strain outcomes (e.g., Fritz & Sonnentag, 2006; Sonnentag & Fritz, 2007). For example, recovery experiences are positively related to employee health and well-being (Fritz & Sonnentag, 2006; Sonnentag & Fritz, 2007). Psychological detachment experiences have been related to increased emotional stability, positive mood, and life satisfaction and to decreased emotional exhaustion, depressive symptoms, sleep problems, fatigue, and general health complaints (Sonnentag & Bayer, 2005; Sonnentag & Fritz, 2007). Relaxation experiences have been related to increased life satisfaction and to decreased emotional exhaustion, sleep problems, and general health complaints (Sonnentag & Fritz, 2007). Mastery experiences have been related to increased emotional stability, life satisfaction, and to decreased emotional exhaustion and depressive symptoms (Sonnentag & Fritz, 2007). Perceived control has been related to increased emotional stability and life satisfaction and to decreased emotional exhaustion, depressive symptoms, sleep problems, and general health complaints (Sonnentag & Fritz, 2007).

Based on this accumulated evidence, it is clear that there is a strong connection between recovery experiences and health and well being. However, from a theoretical standpoint, what outcomes should recovery predict? We can examine recovery in the context of the job-demands resources model (Demerouti, Bakker, Nachinreiner, Schaufeli, 2001), a contemporary work-related stress model, to make theory-based predictions about how recovery should be related to both strain and motivational outcomes. Evaluating recovery in the context of the job-demands resources model

seems intuitive for two reasons. First, both recovery and the job-demands resources model are specific to the work context. Second, recovery involves alleviating employee stress and strain, but it also involves creating positive resources such as energy and positive mood (Sonnentag & Fritz, 2007; Thayer et al, 1994). Accordingly, the concept of recovery seems to fit well with the job-demands resources model of stress, which includes both strain and motivational outcomes.

Job Demands-Resources Model. The job-demands resources model is a contemporary work-stress model that has been gaining empirical support (e.g., Bakker & Demerouti, 2007). This model posits that individuals are exposed to demands and to resources in a work setting (Bakker & Demerouti, 2007; Demerouti et al., 2001). Demands require either physical or psychological effort and include workload, interpersonal conflict, and poor physical work environment (Bakker & Demerouti, 2007). When one cannot adequately recover from the exertion required to meet the demands they can become aversive much like Lazarus and Folkman's (1984) conceptualization of stressors in their transactional model of stress. Resources are aspects of a job that enable the achievement of goals, reduce the burden of job demands, and/or stimulate personal growth or development (Bakker & Demerouti, 2007). Resources include compensation, role clarity, organizational support, and performance feedback.

The job-demands resources model posits that a dual process exists such that job demands lead primarily to strain outcomes (e.g., emotional exhaustion, health complaints), whereas resources lead primarily to motivational outcomes (e.g., high engagement and job performance, positive mood; Bakker & Demerouti, 2007).

According to this dual process theory, recovery experiences should act as a “resource” and lead primarily to increased motivation at work (as opposed to strain outcomes; Bakker & Demerouti, 2007). Indeed, Sonnentag (2003) found that recovery was related to employee work engagement and performance. However, Westman, Etzion, and Chen (2009) examined the influence of a short respite on strain and motivational outcomes and found that it was associated with decreased strain, but not with increased engagement. This finding could be attributed to the fact that although respites provide a break from stressors and an opportunity for recovery, they may not necessarily involve recovery experiences. Based on the job-demands resources model, I hypothesize that:

Hypothesis #5: Recovery subscales will be associated with motivational outcomes (i.e., engagement, positive mood) to a greater extent than they will be associated with strain outcomes (i.e., general health, burnout).

Study 2: Methods

Survey Data Collection (Time 1: September, 2009)

Participants and Procedure. Employed adults were recruited for this study (N = 324: 248 women; 75 men; 1 not reported) using two methods. Approximately half of the participants were recruited to participate in an intervention designed to help employees manage occupational stress and balance the demands of work and life (i.e., Achieving Balance in Life and Employment (ABLE) program; N = 169: 123 women; 45 men; 1 not reported). The remaining participants were recruited by the research team through snowball sampling (N = 155: 105 women; 50 men).

Participants were recruited for the ABLE program intervention study through contacts at a variety of organizations (e.g., health-care, government, university,

service). Organizational contacts distributed a standardized recruitment email to their employees. All participation was voluntary and anonymous (i.e., employers did not know who was participating). All participants completed a survey electronically via LimeSurvey Version 1.85+ (LimeSurvey, 2009) in September, 2009, prior to the onset of the ABLE program.

The ABLE sample, had an average age of 43.32 years (range: 20 to 66 years), Participants had a mean tenure at their current job of 10.07 years (range: 3 weeks to 43 years) and worked an average of 41.78 hours per week (range: 17.5 to 90). Participants had a wide variety of jobs, including: Human Resources Manager, Accountant, Administrative Assistant, Interior Designer, Library Assistant, Director of Operations, Paramedic, Registered Nurse, and Lab Technologist. Participants were well educated; all but one participant had at least a high school degree and 82.6% had completed at least one college or university degree. About three quarters of the sample reported being married or living common law (71.7%), and reported having at least one child (75.8%).

Participants in the snowball convenience sample were recruited via email through professional contacts. All participants completed a survey electronically via LimeSurvey Version 1.85+ (LimeSurvey, 2009) in September, 2009 (at the same time as the ABLE program sample). This convenience sample had an average age of 26.28 years (range: 16 to 65 years). Participants had a mean tenure at their current job of 3.46 years (range: 4 weeks to 36 years) and worked an average of 35.57 hours per week (range: 25 to 66). Participants in this sample also had a wide variety of jobs, including: Physician, Police Officer, Social Worker, Industrial Electrician, Game Developer,

Casino Dealer, Cake Decorator, Sales Associate, and Hairstylist. Participants were well educated; all but one participant had at least a high school degree and 40.2% had completed at least one college or university degree. About one quarter of the sample reported being married or living common law (24.8%), and 11.6% reported having at least one child.

When merged, the average age of participants was 35.14 years (range: 16 to 66 years). The sample had a mean tenure at their current job of 6.91 years (range: 3 weeks to 43 years) and worked an average of 38.77 hours per week (range: 17.5 to 90)¹.

Participants were well educated; all but two participants had at least a high school degree and 62.7% had completed at least one college or university degree. About half of the group reported being married or living common law (49.2%), and 44.7% reported having at least one child.

Measures. The survey included demographic questions and several validated scales measuring: resources (i.e., coping and recovery-related self-efficacy), recovery experiences (i.e., Sonnentag & Fritz's, 2007, scales and the newly developed scales), and strain and motivational outcomes (i.e., strain, burnout, engagement, and positive mood).

Coping. Coping was measured using the self-report 28-item COPE-Brief scale (Carver, 1997). Respondents were asked to rate the extent to which they agreed with each item using a five-point Likert-type scale (1=*strongly disagree*; 5=*strongly agree*). Although, the COPE-Brief was developed to measure 14 separate subscales (i.e., active coping, planning, positive reframing, acceptance, humour, emotional support,

¹ Please see the results section for analyses pertaining to tests of measurement invariance between these samples.

instrumental support, self-distraction, denial, venting, substance use, behavioural disengagement, self-blame, and religion), theory and evidence suggests other factor structures (e.g., two-factor model: problem-focused and emotion-focused; Lazarus & Folkman, 1984; three-factor model: problem-focused, emotion-focused, and maladaptive; Carver et al., 1989; four-factor model: cognitive-approach coping, behavioural-approach coping, cognitive-avoidance coping, and behavioural-avoidance coping; Moos & Schaefer, 1993)

Therefore, I conducted a principal components analysis with oblimin rotation to examine the factor structure of this scale. There were nine eigenvalues over one and Cattell's scree test (Cattell, 1966) suggested a three, four, or nine-component solution may be appropriate (see Appendix G). A Principal Components Analysis was run for all three of these models (i.e., 3-component, 4-component, 9-component). When selecting an appropriate model, consideration was given to communalities, percent variance accounted for by the factors, item loadings, parsimony, and theory. The four-component model was selected because it fit the data fairly well, it was consistent with theory, and it was parsimonious (see Appendix G). The four-component model accounted for 50.95% of the variance in the solution. Although most communalities were moderate in size (e.g., .5 to .7) some were fairly low (range: .18 to .72). For the most part, the items loaded clearly on distinct and theoretically relevant components: problem-focused coping, emotion-focused coping, cognitive-focused coping, and maladaptive coping.

Problem-focused coping. The four-item problem-focused coping scale included the planning and active coping items (e.g., "I've been trying to come up with a strategy

about what to do” and “I’ve been taking action to try and make my situation better”). Item loadings ranged from .69 to .85. In the present sample, the internal reliability of this scale was $\alpha = .89$, with item-total correlations ranging from .72 to .77.

Emotion-focused coping. The eight-item emotion-focused coping scale included the emotional support, instrumental support, venting, and religion coping items (e.g., “I’ve been getting emotional support from others” and “I’ve been praying or meditating”). Item loadings ranged from .37 to .78. One item designed to measure venting cross-loaded on maladaptive coping (loading = .47) and one item designed to tap instrumental support cross-loaded on problem-focused coping (loading = .33). In the present sample, the internal reliability of this scale was $\alpha = .77$, with item-total correlations ranging from .28 to .64.

Cognitive-focused coping. The eight-item cognitive-focused coping scale included the acceptance, positive reframing, humour, and self-distraction coping items (e.g., “I’ve been trying to see it in a different light, to make it seem more positive” and “I’ve been making jokes about it”). Item loadings ranged from .32 to .80. However, one item designed to measure self-distraction did not load on any factor, but it was included in this scale because it loaded the highest on this scale (i.e., .27), the other self-distraction item loaded here, and it made theoretical sense. Furthermore, the item was retained because it is a part of an established scale. In addition, one item designed to measure positive reframing and one item designed to tap humour cross-loaded on problem-focused coping (loadings = .35 and .32 respectively). In the present sample, the internal reliability of this scale was $\alpha = .77$, with item-total correlations ranging from .26 to .55.

Maladaptive coping. The eight-item maladaptive coping scale included the, substance abuse, denial, self-blame and behavioural disengagement coping items (e.g., “I’ve been using alcohol or other drugs to help me get through it” and “I’ve been blaming myself for things that happened”). Item loadings ranged from .47 to .71. In the present sample, the internal reliability of this scale was $\alpha = .81$, with item-total correlations ranging from .46 to .67.

Recovery Experiences. Recovery from work stress was assessed using the 16-item Recovery Experience Questionnaire (REQ; Sonnentag & Fritz, 2007) and the 25 additional items created in Study 1 (see Appendix E). Using a 5-point Likert-type scale (1=I do not agree at all; 5= I fully agree), respondents were asked to rate the extent to which they have been able to engage in recovery experiences over the past several weeks. Because this measure is the focus of this study, the subscales are presented in the results section.

Strain. Strain was assessed using the 20-item Symptoms Checklist (Bartone, Ursano, Wright, & Ingraham, 1989), which describes physical and psychological symptoms of strain. Using a six-point Likert-type scale (0 = never; 5 = always), respondents were asked to rate the extent to which they had experienced each symptom over the past few weeks (e.g., general aches or pains; nervousness or tenseness; common cold or flu; and headaches). In the present sample, the internal reliability of this scale was $\alpha = .89$, with item-total correlations ranging from .42 to .64.

Burnout. Burnout was assessed using the 16-item Maslach Burnout Inventory – General Survey (Maslach, Jackson, & Leiter, 1996). Respondents were asked to rate

each item using a seven-point Likert-type scale (0 = never; 6 = every day). The MBI consists of three subscales: emotional exhaustion, cynicism, and professional efficacy.

Emotional exhaustion. A five-item emotional exhaustion scale measured the extent to which participants feel tired and drained from work (e.g., “I feel emotionally drained from work”). In the present sample, the internal reliability of this scale was $\alpha = .90$, with item-total correlations ranging from .72 to .79.

Cynicism. A five-item cynicism scale measured the extent to which participants feel like they make a positive contribution at work (e.g., “I doubt the significance of my work”). In the present sample, the internal reliability of this scale was $\alpha = .84$, with item-total correlations ranging from .47 to .77.

Professional Efficacy. A six-item professional efficacy scale measured the extent to which participants feel like they are effective at work (e.g., “In my opinion I am good at my job”). In the present sample, the internal reliability of this scale was $\alpha = .83$, with item-total correlations ranging from .38 to .75.

Mood. The ten “positive” items from the Positive and Negative Affectivity Scale (PANAS; Watson, Clark, & Tellegen, 1988) were used to measure positive mood. Using a five-point Likert-type scale (1=very slightly or not at all; 5=extremely), respondents were asked to rate the extent to which they experienced a list of emotions (e.g., enthusiastic, excited, determined, inspired) within the past few weeks.² In the present sample, the internal reliability of this scale was $\alpha = .91$, with item-total correlations ranging from .57 to .76.

² Watson, Clark, and Tellegen (1988) found that the test-retest reliability for the PANAS when used to evaluate mood over the “past few weeks” (.58) is similar to the test-retest reliability for the PANAS when used to evaluate mood in the “moment” (.54).

Engagement. Engagement was assessed using the 16-item Utrecht Work Engagement Scale-9 (UWES-9; Schaufeli, Bakker, & Salanova, 2006). Sample items include: “I am enthusiastic about my job”; and “I feel happy when I am working intensely”. Respondents were asked to rate each item using a seven-point Likert-type scale (0 = never; 6 = always). The UWES-9 consists of three subscales: vigor, dedication, and absorption.

Vigor. A three-item vigor scale measured the extent to which participants experience high energy and sense of perseverance at work (e.g., “At my work, I feel bursting with energy”). In the present sample, the internal reliability of this scale was $\alpha = .79$, with item-total correlations ranging from .46 to .74.

Dedication. A three-item dedication scale measured the extent to which participants feel excited and proud of their work (e.g., “I am enthusiastic about my job”). In the present sample, the internal reliability of this scale was $\alpha = .86$, with item-total correlations ranging from .66 to .78.

Absorption. A three-item absorption scale measured the extent to which participants feel happily engaged and focused on their work (e.g., “I feel happy when I am working intensely”). In the present sample, the internal reliability of this scale was high $\alpha = .82$, with item-total correlations ranging from .59 to .75.

Study 2: Results

Prior to the analyses, confirmatory factor analysis in AMOS 7.0 (Arbuckle, 2006) was used to test measurement invariance of the recovery model in the two samples (i.e., ABLE program and snowball sample). Following the procedures suggested by Byrne (2010), I conducted a multi-group analysis with the ten factor

recovery model. First, I ran the unconstrained model, in which the loadings of the recovery items on the recovery subscales were not constrained to be equal across groups. The chi-square for the unconstrained model was 3186.64, $p < .001$, the CFI was .86, and the RMSEA was .05 (PCLOSE=.05). Second, I ran the same model, but constrained the measurement weights, measurement intercepts, structural means and structural covariances to be equal across the groups. For example, the loading of the first psychological detachment item on the psychological detachment latent factor for one sample was constrained to be equal to the loading of that same item on the psychological detachment latent factor in the other sample. The chi-square for the constrained model was 3296.73, $p < .001$, the CFI was .86, and the RMSEA was .05 (PCLOSE=.46).

To determine whether there was measurement invariance between these two samples, I conducted a chi-square difference test and a CFI difference test comparing the two models. Both the chi-square difference test and the CFI difference test indicated that the two samples were invariant ($\chi^2_{\text{difference}} = 110.09$, $df = 126$, $p > .001$; $CFI_{\text{difference}} = .002$). The lack of significant difference in chi-square and CFI values suggests that the fit of the recovery model does not significantly differ across samples. Therefore, these two data sets were merged for Study 2 analyses.

Data were also screened for outliers, data entry errors, and violations of assumptions, including heterogeneity of variance and non-normality. All variables demonstrated acceptable properties and no cases were deleted. Most statistical analyses were performed using SPSS Version 17.0 (SPSS for Windows, 2008). When other software was used it is specified within the text. Missing data were treated using

listwise deletion. Sample sizes for each analysis are presented in the associated Table or Figure captions. The descriptive statistics and correlation coefficients for the Study 2 variables are presented in Table 5.

Recovery Factor Structure

Scale development methodology suggests that exploratory factor analysis is the appropriate procedure for examining the initial factor structure of a scale and making decisions about item reduction (Crocker & Algina, 1986; Hinkin, 1998; Nunnally & Bernstein, 1994). Exploratory factor analysis, as opposed to confirmatory factor analysis, is particularly useful during the scale development process because it can prevent misspecification of the number of factors and allows for loadings on non-hypothesized factors (Kelloway, 1995).

Therefore, to address Hypothesis 1, a principal components analysis with oblimin rotation was conducted on all recovery items. The initial principal components analysis identified ten eigenvalues greater than one; Cattell's scree test (Cattell, 1966) suggested a seven- or a ten-component solution (see Figure 1). I examined both structures the seven- and ten-component solution. The seven-component solution accounted for 68.56 % of the variance in the solution and the communalities for this solution were fairly high and consistent (range .49 to .92). However, examination of the pattern matrix revealed that the factor structure was not consistent with theory and past research. For instance, the existing psychological detachment and relaxation items loaded together on one scale. Furthermore, there were numerous cross-loaded items. The ten-component solution accounted for 77.15 % of the variance in the solution, and it was almost identical to the theorized solution; it included the four original

components (i.e., psychological detachment, relaxation, mastery, control), the five theorized components (i.e., physical activity, social affiliation, hope, fun, and self-reward), and an additional component that was composed of the extra control items pertaining to “planning.” The communalities for this solution were high and fairly consistent (range .54 to .93, with most communalities $>.70$; see Table 3), suggesting that the variance from these items is being accounted for in these ten factors.

With one exception, all of the items loaded on their predicted components (loadings ranged from .33 to .94; see Table 3). One item that was designed to tap into self-reward (i.e., “I took time to do the things that I enjoy”) loaded on the existing relaxation scale (factor loading = .57). Although this item could have been included with the relaxation scale, I decided to keep Sonnentag and Fritz’s (2007) existing recovery subscales unchanged to allow for comparison with other recovery studies. Therefore, this item was deleted. There were two complex items (i.e., “I thought about positive things that are going to happen”; “I looked forward to upcoming events”), which loaded on both their intended component (i.e., hope/optimism; loadings were .43 and .33, respectively) and another component (i.e., fun/humour: loadings were .38 and .39, respectively). Given that these items did load onto the theoretically relevant factor, they were maintained as part of the hope/optimism factor³.

³ To explore this issue further, I conducted a post-hoc Principal Components Analysis with only the fun/humour and the hope/optimism items. Two components clearly emerged, with the items loading on their respective scales.

Scree Plot

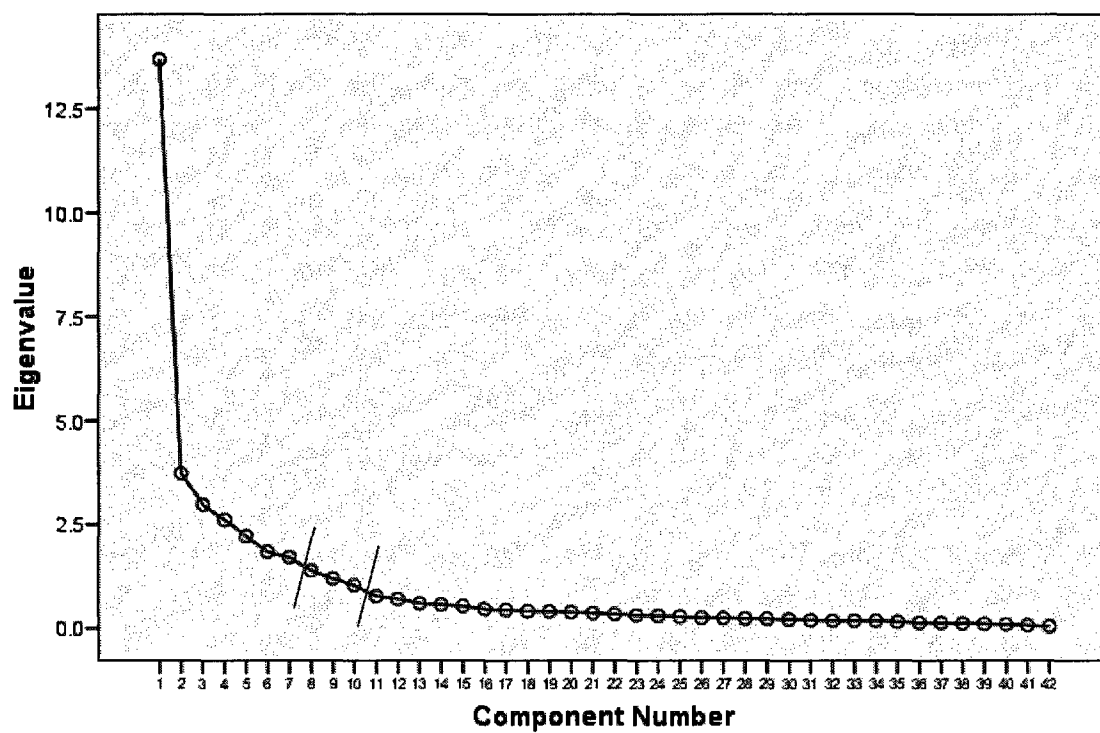


Figure 1. Scree Plot for the Principal Components Analysis of Recovery Items

Table 3.

Communalities and Pattern Matrix for Principal Components Analysis of Recovery Items (N=244)¹.

Item	Communalities	Component									
		1	2	3	4	5	6	7	8	9	10
I forgot about work.	.80	<u>.85</u>	-.01	.11	-.04	-.06	.01	-.03	-.03	.00	.08
I didn't think about work at all.	.78	<u>.83</u>	-.13	.06	-.07	-.04	-.06	-.03	-.06	-.04	.06
I distanced myself from my work.	.80	<u>.90</u>	.05	-.07	.06	.02	.02	.02	.00	.05	.03
I got a break from the demands of work.	.66	<u>.68</u>	-.14	-.02	.15	.08	.08	.13	.09	-.01	-.19
I kicked back and relaxed.	.84	.12	<u>-.84</u>	.03	.04	.07	-.04	-.08	.09	.04	.03
I did relaxing things.	.88	.05	<u>-.89</u>	.00	-.00	-.03	.02	.01	-.02	.01	.03
I used the time to relax.	.90	.06	<u>-.90</u>	.00	.04	.01	.04	-.04	.01	-.02	.01
I took time for leisure.	.83	.06	<u>-.80</u>	.03	.00	-.01	.14	.08	-.02	.04	-.05
I learned new things.	.72	.01	.03	<u>.79</u>	.07	.02	.06	-.02	.05	-.03	.14
I sought out intellectual challenges.	.77	.08	.09	<u>.84</u>	.06	.00	-.02	.00	.03	.07	-.05
I did things that challenged me.	.77	.08	.04	<u>.78</u>	-.06	-.13	-.06	.17	-.03	.08	-.15
I did something to broaden my horizons.	.73	-.07	-.15	<u>.84</u>	.01	.05	.05	-.03	-.03	-.07	.08
I felt like I could decide for myself what to do.	.68	-.05	-.11	.12	<u>.68</u>	.09	.05	-.05	.08	.17	.00
I decided my own schedule.	.80	.03	.01	-.02	<u>.89</u>	-.05	.01	-.06	-.05	.01	.01
I determined for myself how I would spend my time.	.85	.10	-.01	-.01	<u>.89</u>	-.01	.04	.07	.00	-.03	-.03
I took care of things the way that I wanted them done.	.70	-.04	.01	.12	<u>.64</u>	-.30	-.07	.08	.06	.05	.04
I got myself organized (e.g., made lists, cleaned up)	.85	.04	.03	.02	.03	<u>-.91</u>	.03	-.02	-.01	-.04	.03
I got things checked off my "to-do" list.	.86	-.03	-.03	-.01	.07	<u>-.90</u>	.05	.07	-.03	-.05	-.05
I spent quality time with my friends and/or family.	.79	.03	-.05	.04	-.06	-.02	<u>.89</u>	-.02	.02	-.03	-.03
I socialized with others.	.79	.01	.01	.02	.05	.01	<u>.87</u>	-.02	-.03	-.01	.07
I kept in touch with friends and/or family (e.g., phone, facebook, email).	.69	.01	-.09	-.05	.13	-.05	<u>.70</u>	.01	.04	-.08	.14
I spent time with people I care about.	.68	-.01	.08	.03	-.07	-.04	<u>.67</u>	.11	.01	.28	.12

Continued on next page.

Item	Communalities	Components									
		1	2	3	4	5	6	7	8	9	10
I engaged in activities that increased my heart rate.	.90	.03	.02	.02	-.05	-.05	.00	<u>.92</u>	.00	.02	.05
I engaged in physical activity.	.93	.04	.02	.03	-.05	-.01	.01	<u>.94</u>	-.02	.05	.00
I participated in sports or active recreational activities.	.85	.07	-.04	.05	-.03	.01	-.02	<u>.87</u>	.05	-.04	.09
I did things that required physical exertion.	.82	.01	.01	-.04	.02	.02	-.05	<u>.94</u>	.00	-.03	.02
I daydreamed about my future.	.77	-.06	.07	.00	.05	.13	.02	.07	<u>.90</u>	-.11	.04
I planned activities, trips, or events.	.54	.11	-.05	-.04	-.02	-.21	.03	.13	<u>.41</u>	.24	.09
I thought about what I would like to do or attain in the future (e.g., vacation, new house, dream job).	.80	.00	-.08	.00	-.01	-.05	-.01	-.06	<u>.90</u>	-.01	-.06
I thought about positive things that are going to happen.	.67	.09	.06	.11	-.05	-.18	.07	-.09	<u>.43</u>	<u>.38</u>	.15
I looked forward to upcoming events.	.67	.07	-.09	.07	-.03	-.21	.11	-.01	<u>.33</u>	<u>.39</u>	.05
I did things that made me laugh.	.82	.01	-.13	.09	-.01	-.10	.09	-.01	.06	<u>.70</u>	.03
I did things that were fun.	.77	-.08	-.25	.06	-.05	-.01	.09	.09	.00	<u>.67</u>	-.05
I engaged in activities that I find exciting.	.68	-.09	-.22	.10	-.03	.09	.05	.21	.04	<u>.56</u>	.09
I tried to see the humour in situations.	.75	.04	.01	.01	-.01	.02	.01	-.04	-.06	<u>.82</u>	.09
I joked around.	.76	.08	.07	-.03	.05	.05	.09	-.01	-.01	<u>.81</u>	.07
I spent some quality "me time".	.63	-.07	-.27	-.11	-.03	-.03	.15	.05	-.02	.08	<u>.43</u>
I rewarded myself with something special.	.84	.03	-.08	.03	.10	-.05	.02	.02	.01	.12	<u>.80</u>
I took time to do the things I enjoy. ¹	.71	-.05	<u>.57</u>	-.00	.11	-.13	-.02	.18	-.03	.16	.19
I pampered myself.	.80	.00	-.12	.05	.24	-.06	.05	.05	.03	-.01	<u>.81</u>
I treated myself by buying something that I really wanted.	.80	.04	.11	.03	-.01	.07	.01	.06	.02	.01	<u>.90</u>

Note: Factor loadings above .32 are bolded, italicized, and underlined. ¹Item was deleted in final scale

Therefore, I proceeded with the ten-factor solution. The final solution (with the one deleted item) accounted for 77.33% of the solution. The communalities for this solution remained high and consistent (range .54 -.93, with most >.70) and items loadings are almost identical to those reported in Table 4. The ten subscales are summarized below:

(1) *Psychological Detachment*. A four-item psychological detachment subscale measured the extent to which participants get away from the demands of work during non-work time (e.g., “I forgot about work”; Sonnentag & Fritz, 2007). In the present sample, item loadings ranged from .68 to .90 and the internal reliability of this scale was $\alpha = .88$, with item-total correlations ranging from .61 to .78.

(2) *Relaxation*. A four-item psychological detachment subscale measured the extent to which participants spend time relaxing during their non-work time (e.g., “I kick back and relax”; Sonnentag & Fritz, 2007). In the present sample, item loadings ranged from .81 to .93 and the internal reliability of this scale was $\alpha = .95$, with item-total correlations ranging from .83 to .92.

(3) *Mastery*. A four-item mastery subscale measured the extent to which participants engage in new or challenging activities during non-work time (e.g., “I learn new things”; Sonnentag & Fritz, 2007). In the present sample, item loadings ranged from .78 to .84 and the internal reliability of this scale was $\alpha = .87$, with item-total correlations ranged from .69 to .77.

(4) *Control*. A four-item control subscale measured the extent to which participants have control over their non-work time. (e.g., “I feel like I can decide for

myself what to do”; Sonnentag & Fritz, 2007). The two additional items added to tap into “control” did not load with these existing control items (loadings were .03 and .07). Therefore, they are included in a separate “planning” scale below. In the present sample, item loadings ranged from .64 to .89 and the internal reliability of this scale was $\alpha = .86$, with item-total correlations ranging from .64 to .79.

(5) *Planning*. Two items measured the extent to which participants engaged in activities to help organize themselves during their non-work time (i.e., “I got myself organized (e.g., made lists, cleaned up)” and “I got things checked off my “to-do” list”). In the present sample, item loadings were .90 and .89 respectively and these two items were strongly correlated ($r = .77, p < .01$).

(6) *Physical Activity*. A five-item physical activity subscale measured the extent to which participants engaged in physically stimulating activity during their non-work time (e.g., “I did things that were physically demanding (e.g., housework; gardening; exercise)”). In the present sample, item loadings ranged from .81 to .94 and the internal reliability of this scale was $\alpha = .94$, with item-total correlations ranging from .78 to .92.

(7) *Social Affiliation*. A four-item social affiliation subscale measured the extent to which participants engaged in social activities during their non-work time (e.g., “I spent quality time with my friends and/or family”). In the present sample, item loadings ranged from .67 to .89 and the internal reliability of this scale was $\alpha = .86$, with item-total correlations ranging from .66 to .78.

(8) *Hope/Optimism*. A five-item hope/optimism subscale measured the extent to which participants thought positively about future events or experiences during their non-work time (e.g., “I thought about positive things that are going to happen”). In the

present sample, item loadings ranged from .32 to .90 and the internal reliability of this scale was $\alpha = .83$, item-total correlations ranging from .54 to .69.

(9) *Fun/Humour*. A five-item fun/humour subscale measured the extent to which participants spent time doing things that were fun and lighthearted during their non-work time (e.g., “I did things that made me laugh”). In the present sample, item loadings ranged from .56 to .83 and the internal reliability of this scale was $\alpha = .91$, with item-total correlations ranging from .74 to .82.

(10) *Self-Reward*. A four-item self-reward subscale measured the extent to which people rewarded or treated themselves to something special during their non-work time (e.g., “I rewarded myself with something special”). In the present sample, item loadings ranged from .44 to .90 and the internal reliability of this scale was $\alpha = .86$, with item-total correlations ranging from .58 to .82.

Higher-Order Recovery Factor Structure

Given that a ten subscale recovery model may not be practical for all research and applied uses, these ten subscales were entered into a principal components analysis with oblimin rotation to examine whether a higher-order factor structure existed. The principal components analysis revealed three eigenvalues greater than one; Cattell’s scree test (Cattell, 1966) also suggested a three-component solution (see Figure 2 and Table 4). The communalities for this solution were moderate to high and fairly consistent (ranging from .45 to .86; see Table 4), and the three components accounted for 62.64 % of the variance in the solution.

The first component was labeled as emotional recovery and included the relaxation, social affiliation, hope/optimism, fun/humour, and self-reward subscales

(subscale loadings ranged from .52 to .77; see Table 4). The second factor was labeled as directed recovery and included the mastery, control, planning and physical activity subscales (subscale loadings ranged from .45 to .70). The third component only included the psychological detachment subscale (loading = .89). The relaxation subscale also loaded on the third component (i.e., with psychological detachment; loading = .46). However, given the high loading of the relaxation subscale on the first component, this scale was included with the higher-order emotional recovery scale instead of with the psychological detachment scale. The internal reliability of the emotional recovery scale was $\alpha = .83$, with item-total correlations ranging from .56 to .75 and the internal reliability of the directed recovery scale was $\alpha = .64$, with item-total correlations ranging from .40 to .44. Because these three high-order factors make theoretical sense and have practical implications for use in both research and practice, subsequent analyses were conducted using both the ten recovery subscales and the three higher-order recovery factors (where appropriate). All results associated with the three-higher order recovery factors are summarized in footnotes and full results are presented in Appendices.

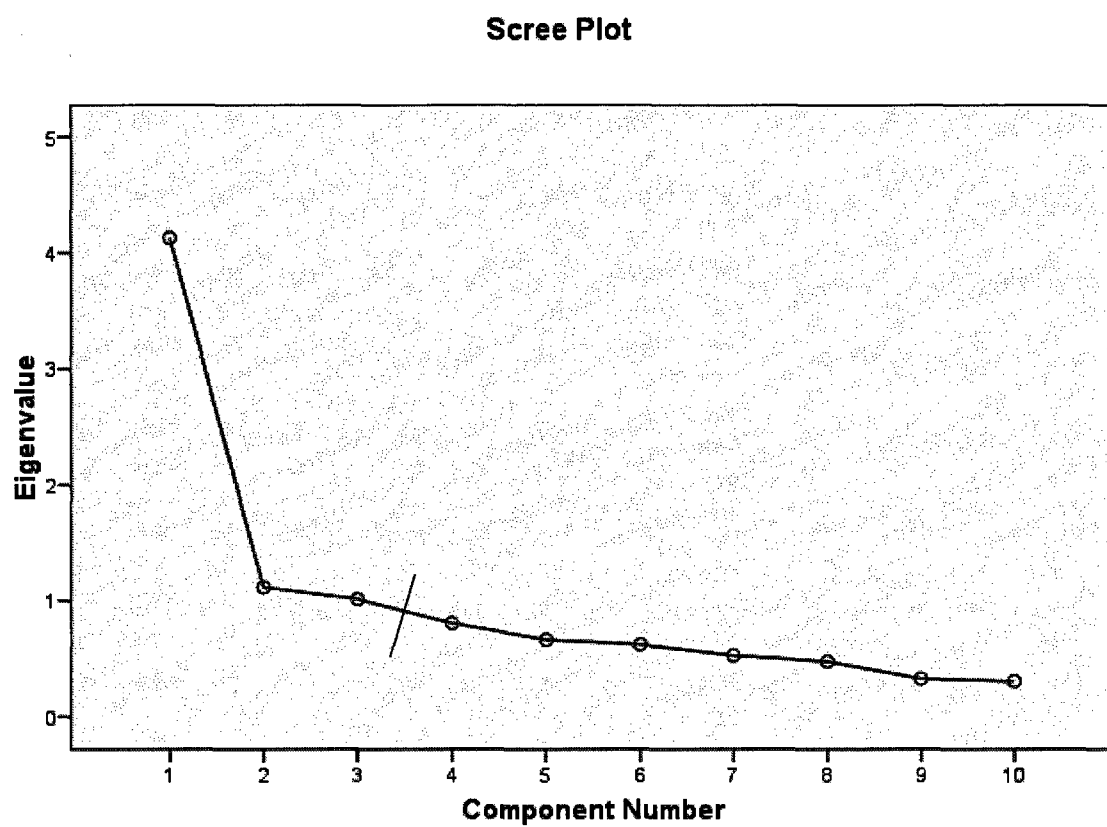


Figure 2. Scree Plot for the Principal Components Analysis of Recovery Subscales.

Table 4.

Communalities and Pattern Matrix for Principal Components Analysis of the Recovery Subscales (N = 291).¹

Higher-Order Scales	Subscales	Items	Communalities	Component Loadings		
				1	2	3
Detachment	Detachment	I forgot about work.				
		I didn't think about work at all.				
		I distanced myself from my work.	.86	-.09	.08	.94
		I got a break from the demands of work.				
Mastery	Mastery	I learned new things.				
		I sought out intellectual challenges.				
		I did things that challenged me.	.48	.09	.53	.30
		I did something to broaden my horizons.				
Control	Control	I felt like I could decide for myself what to do.				
		I decided my own schedule.				
		I determined for myself how I would spend my time.	.48	.28	.41	.26
		I took care of things the way that I wanted them done.				
Planning	Planning	I got myself organized (e.g., made lists, cleaned up)				
		I got things checked off my "to-do" list.	.70	-.11	.87	-.03
Physical	Physical	I did things that were physically demanding (e.g., housework; gardening; exercise).				
		I engaged in activities that increased my heart rate.				
		I engaged in physical activity.	.45	.23	.56	-.08
		I participated in sports or active recreational activities.				
		I did things that required physical exertion.				

Emotional Recovery	I kicked back and relaxed.			
	I did relaxing things.			
Relaxation	I used the time to relax.	.77	.70	.46
	I took time for leisure.			
Social	I spent quality time with my friends and/or family.			
	I socialized with others.			
	I kept in touch with friends and/or family (e.g., phone, facebook, email).	.64	.77	.10
	I spent time with people I care about.			-.07
Hope/ Optimism	I daydreamed about my future.			
	I planned activities, trips, or events.			
	I thought about what I would like to do or attain in the future (e.g., vacation, new house, dream job).	.52	.59	.06
	I thought about positive things that are going to happen.			
	I looked forward to upcoming events.			
Fun/Humour	I did things that made me laugh.			
	I did things that were fun.			
	I engaged in activities that I find exciting.	.74	.83	.26
	I tried to see the humour in situations.			.05
	I joked around.			
Self-Reward	I spent some quality "me time".			
	I rewarded myself with something special.			
	I pampered myself.	.63	.83	-.05
	I treated myself by buying something that I really wanted.			-.08

¹Factor loadings above .32 are **bolded and italicized**.

Table 5. Correlations among Study 2 Variables. Scale reliabilities are presented along the diagonal ($N=273$).²

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Gender ¹	.77	.42	----																
2 Age	35.1	12.7	.16 ^b	----															
3 Job Experience	6.91	8.64	.02	.58 ^c	----														
4 Emo. Rec.	3.54	.76	-.14 ^a	-.37 ^c	-.15 ^a	.83													
5 Dir. Rec.	3.34	.74	-.14 ^a	-.21 ^b	-.09	.56 ^c	.64												
6 Detachment	2.96	1.06	-.17 ^b	-.16 ^b	-.01	.30 ^c	.25 ^c	.88											
7 Relaxation	3.46	1.08	-.21 ^b	-.21 ^b	-.10	.77 ^c	.33 ^c	.42 ^c	.95										
8 Mastery	2.99	1.02	-.06	-.17 ^b	-.04	.40 ^c	.68 ^c	.24 ^c	.25 ^c	.87									
9 Control	3.54	.94	-.12	-.23 ^c	-.16 ^b	.49 ^c	.67 ^c	.21 ^c	.41 ^c	.33 ^c	.86								
10 Planning	3.50	1.09	.09	-.11	-.07	.28 ^c	.70 ^c	.11	.07	.26 ^c	.38 ^c	.77 ^d							
11 Physical	3.33	1.23	.29 ^c	-.09	.01	.40 ^c	.72 ^c	.14 ^a	.21 ^c	.34 ^c	.24 ^c	.31 ^c	.94						
12 Social	3.84	.85	-.04	-.23 ^c	-.14 ^a	.77 ^c	.47 ^c	.15 ^a	.49 ^c	.29 ^c	.39 ^c	.28 ^c	.35 ^c	.86					
13 Fun	3.75	.92	-.15 ^a	-.35 ^c	-.11	.85 ^c	.51 ^c	.24 ^c	.56 ^c	.42 ^c	.43 ^c	.24 ^c	.35 ^c	.64 ^c	.91				
14 Hope	3.73	.90	-.07	-.38 ^c	-.16 ^b	.71 ^c	.47 ^c	.19 ^b	.35 ^c	.33 ^c	.34 ^c	.32 ^c	.32 ^c	.45 ^c	.56 ^a	.83			
15 Self-reward	2.93	1.15	-.07	-.29 ^c	-.08	.80 ^c	.43 ^c	.14 ^a	.53 ^c	.29 ^c	.35 ^c	.21 ^b	.34 ^c	.48 ^c	.57 ^c	.46 ^c	.86		
16 Prob. Cope	3.68	.86	-.03	-.07	.01	.15 ^a	.24 ^c	.08	.09	.17 ^b	.10	.25 ^c	.14 ^a	.08	.13 ^a	.18 ^b	.12	.89	
17 Emo. Cope	2.94	.75	.27 ^c	.00	.03	.07	.04	.01	-.04	.06	-.06	.07	.03	.05	.05	.13 ^a	.10	.25 ^c	.77

Continued on next page.

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
18 Cog. Cope	3.24	.66	.04	-.09	-.03	.15 ^c	.09	-.03	.05	.13 ^a	-.03	.12	.03	.10	.18 ^b	.17 ^b	.10	.25 ^c	.49 ^c
19 Maladap. Cope	2.07	.74	.04	.00	.01	-.26 ^c	-.11	-.10	-.31	-.06	-.24 ^c	-.06	.01	-.24 ^c	-.23 ^c	-.05	-.15 ^a	-.08	.19 ^b
20 Strain	1.50	.77	.21 ^c	-.10	-.08	-.20 ^b	-.20 ^b	-.09	-.22 ^c	-.08	-.25 ^c	-.06	-.17 ^b	-.19 ^b	-.19 ^b	-.05	-.13 ^a	.10	.17 ^b
21 Emo. Exhaustion ²	3.02	1.60	.24 ^b	.07	.14	-.10	-.27 ^b	-.15	-.16	-.20 ^a	-.17 ^a	-.20 ^a	-.20 ^a	-.06	-.14	-.14	-.02	.07	.16
22 Cynicism ²	2.15	1.54	-.02	-.01	.13	-.19 ^a	-.24 ^b	-.04	-.12	-.17	-.19 ^a	-.14	-.10	-.11	-.18 ^a	-.06	-.25 ^b	-.01	.06
23 Prof. Efficacy ²	4.51	1.18	.16	-.05	-.13	.28 ^b	.33 ^c	.05	.14	.20 ^a	.25 ^b	.27 ^b	.22 ^a	.27 ^b	.28 ^b	.23 ^b	.21 ^a	.12	.10
24 Vigor	2.93	1.20	-.04	-.06	-.13 ^a	.19 ^b	.32 ^c	-.03	.13 ^a	.20 ^b	.26 ^c	.18 ^b	.25 ^c	.16 ^b	.22 ^c	.08	.16 ^b	.00	-.07
25 Dedication	3.59	1.32	-.04	.09	-.02	.13 ^a	.23 ^c	-.08	.06	.10	.26 ^c	.12	.17 ^b	.13 ^a	.21 ^b	.06	.06	-.05	-.04
26 Absorption	3.52	1.28	.00	.21 ^c	.00	.00	.18 ^b	-.17 ^b	-.05	.10	.17 ^b	.09	.14 ^a	.06	.07	-.02	-.03	-.05	-.03
27 Pos. Mood	3.17	.81	-.19 ^b	-.31 ^c	-.18 ^b	.54 ^c	.55 ^c	-.15 ^a	.38 ^c	.40 ^c	.43 ^c	.29 ^c	.42 ^c	.37 ^c	.54 ^c	.39 ^c	.42 ^c	.11	.05

Continued on next page.

Variable	18	19	20	21	22	23	24	25	26	27
18 Cog. Cope	.77									
19 Maladap. Cope	.15 ^a	.81								
20 Strain	.12 ^a	.37 ^c	.89							
21 Emo. Exhaustion ²	-.08	.20 ^a	.27 ^b	.90						
22 Cynicism ²	-.04	.31 ^b	.18 ^a	.47 ^c	.84					
23 Prof. Efficacy ²	.06	-.18	-.14	-.26 ^b	-.46 ^c	.83				
24 Vigor	.02	-.20 ^c	-.25 ^c	-.61 ^c	-.57 ^c	.51 ^c	.79			
25 Dedication	-.02	-.24 ^c	-.28 ^c	-.46 ^c	-.65 ^c	.63 ^c	.76 ^c	.86		
26 Absorption	-.07	-.13 ^a	-.25 ^c	-.22 ^a	-.43 ^c	.46 ^c	.64 ^c	.76 ^c	.82	
27 Pos. Mood	.15 ^a	-.24 ^c	-.28 ^c	-.26 ^b	-.43 ^c	.48 ^c	.52 ^c	.40 ^c	.28 ^c	.90

¹Gender: 0=men, 1=women

²For correlations involving the MBI and role ambiguity N=120. Data were only collected in the ABLE work-life balance program sample.

³A correlation coefficient is presented for "planning" as it only includes two items.

^a $p < .05$; ^b $p < .01$; ^c $p < .001$

Incremental Validity of New Recovery Scales

Hierarchical regression analyses were conducted to examine whether the new recovery subscales have incremental validity above and beyond the existing four recovery subscales (Hypothesis 2). Regression analyses were conducted for all of the study outcomes: strain, burnout (emotional exhaustion, cynicism, and professional efficacy), positive mood, and engagement (absorption, dedication, and vigor). For all analyses, the four existing recovery subscales (i.e., psychological detachment, relaxation, mastery, and control) were entered in Step 1, and the new recovery subscales (i.e., planning, physical activity, social affiliation, hope/optimism, fun/humour, self-reward) were entered in Step 2 (see Table 6).

When entered in the first step, the original four recovery scales accounted for a significant amount of variance in strain ($R^2 = .07, p < .001$), emotional exhaustion ($R^2 = .07, p < .05$), professional efficacy ($R^2 = .09, p < .05$), vigor ($R^2 = .10, p < .001$), absorption ($R^2 = .08, p < .001$), dedication ($R^2 = .09, p < .001$), and positive mood ($R^2 = .29, p < .001$), but not in cynicism ($R^2 = .05, p > .05$). Each of the recovery subscales accounted for a significant amount of unique variance in at least two of the outcomes: Psychological detachment was negatively related to all of the engagement components (β 's ranged from $-.13$ to $-.26; p < .05$). Relaxation was negatively related to strain ($\beta = -.14; p < .05$) and positively related to positive mood ($\beta = .23; p < .001$). Mastery was positively related to vigor ($\beta = .15; p < .05$) and positive mood ($\beta = .27; p < .001$). Control was negatively related to strain ($\beta = -.18; p < .01$) and positively related to professional

efficacy ($\beta=.22$; $p<.05$), vigor ($\beta=.22$; $p<.01$), absorption ($\beta=.21$; $p<.01$), dedication ($\beta=.28$; $p<.001$), and positive mood ($\beta=.26$; $p<.001$).

When entered in the second step together, the six new scales accounted for a significant amount of additional variance in vigor ($R^2_{\text{change}}=.05$, $p<.05$), dedication ($R^2_{\text{change}}=.05$, $p<.05$), and positive mood ($R^2_{\text{change}}=.12$, $p<.05$), but not in strain ($R^2_{\text{change}}=.03$, $p>.05$), emotional exhaustion ($R^2_{\text{change}}=.06$, $p>.05$), cynicism ($R^2_{\text{change}}=.02$, $p>.05$), professional efficacy ($R^2_{\text{change}}=.05$, $p>.05$), or absorption ($R^2_{\text{change}}=.04$, $p>.05$). Of the six new recovery subscales, physical activity and fun/humour accounted for unique variance in several motivational outcomes. Specifically, physical activity accounted for a significant amount of unique variance in vigor ($\beta=.18$, $p<.01$), and both physical activity and fun/humour accounted for a significant amount of unique variance in dedication ($\beta=.14$, $p<.05$; $\beta=.26$, $p<.001$ respectively), and positive mood ($\beta=.19$, $p<.001$; $\beta=.30$, $p<.001$ respectively).

As a secondary analysis, and to complete a redundancy analysis, I assessed the incremental validity of the existing recovery subscales above and beyond the new recovery subscales for all study outcome variables. A redundancy analysis includes conducting both the hierarchical regression examining the incremental validity of the new recovery subscales over and above the existing subscales and the hierarchical regression examining the incremental validity of the existing recovery subscales over and above the new subscales. This set of analyses allows for the assessment of the unique variance accounted for in the strain and motivational outcomes by each set of subscales. If either of the sets of subscales (i.e., existing recovery subscales or new recovery subscales) do not account for unique variance in the strain and motivational

outcomes than it suggests that these subscales may not be useful (or may be redundant).

For the second set of analyses, the new recovery scales (i.e., planning, physical activity, social affiliation, hope/optimism, fun/humour, self-reward) were entered in Step 1 and the four existing recovery scales (i.e., psychological detachment, relaxation, mastery, and control) were entered in Step 2 (see Appendix H). When entered in the first step, the six new recovery scales accounted for a significant amount of variance in strain ($R^2 = .06, p < .05$), professional efficacy ($R^2 = .13, p < .01$), vigor ($R^2 = .11, p < .001$), absorption ($R^2 = .05, p < .05$), dedication ($R^2 = .08, p < .01$), and positive mood ($R^2 = .37, p < .001$), but not in emotional exhaustion ($R^2 = .08, p > .05$) and cynicism ($R^2 = .06, p > .05$). Specifically, planning, physical activity, and fun/humour accounted for a significant amount of unique variance in these outcomes. Planning was positively related to vigor ($\beta = .13; p < .05$) and positive mood ($\beta = .12; p < .05$). Physical activity was negatively related to strain ($\beta = -.13; p < .05$) and positively related to vigor ($\beta = .19; p < .01$), absorption ($\beta = .16; p < .05$) and positive mood ($\beta = .21; p < .001$). Fun/Humour was positively related to vigor ($\beta = .20; p < .01$), dedication ($\beta = .27; p < .01$), and positive mood ($\beta = .38; p < .001$).

When entered in the second step together, the four existing scales accounted for a significant amount of additional variance in strain ($R^2_{\text{change}} = .04, p < .05$), vigor ($R^2_{\text{change}} = .04, p < .05$), absorption ($R^2_{\text{change}} = .07, p < .001$), dedication ($R^2_{\text{change}} = .06, p < .01$), and positive mood ($R^2_{\text{change}} = .04, p < .01$), but not in any of the burnout measures (R^2_{change} ranged .01 to .05 from $p > .05$). Of the four existing recovery subscales, psychological detachment and control were the only subscales that

Table 6.

*Summary of the Hierarchical Regression Analyses Demonstrating the Incremental Prediction of the New Recovery Subscales**Above and Beyond the Existing Recovery Subscales on Study Outcomes.¹*

Predictor	Strain		Emo. Exh.		Cynicism		Prof. Efficacy		Vigor		Absorption		Dedication		Pos. Mood	
	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
Step 1		.07^c		.07^a		.05		.09^a		.10^c		.08^c		.09^c		.29^c
Psych. Detach.	-.02		-.14		-.03		-.03		-.13 ^a		-.20 ^b		-.13 ^a		-.09	
Relaxation	-.14 ^a		-.04		.01		.03		.06		-.06		-.02		.23 ^c	
Mastery	.01		-.10		-.11		.16		.15 ^a		.10		.05		.27 ^c	
Control	-.18 ^b		-.11		-.16		.22 ^a		.22 ^b		.21 ^b		.28 ^c		.26 ^c	
Step 2		.03		.06		.02		.05		.05^a		.04		.05^a		.12^c
Psych. Detach.	-.02		-.11		-.05		-.01		-.13 ^a		-.21 ^b		-.13 ^a		-.07	
Relaxation	-.13		-.14		.07		-.05		.04		-.03		-.05		.09	
Mastery	.03		-.09		-.08		.09		.09		.07		-.01		.12 ^a	
Control	-.19 ^b		-.08		-.11		.10		.18 ^b		.20 ^b		.26 ^c		.16 ^b	
Planning	.03		-.16		-.09		.11		.08		.02		.02		.07	
Physical activity	-.14 ^a		-.13		.00		.07		.18 ^b		.15 ^a		.14 ^a		.19 ^c	
Social Affiliation	-.06		.19		.08		.10		-.04		.01		-.03		-.10	
Hope/Optimism	.13		-.03		.14		.03		-.13		-.12		-.11		.05	
Fun/Humour	.15		-.09		-.20		.11		.15		.10		.26 ^c		.30 ^c	
Self-Reward	-.05		.17		-.06		-.01		-.02		-.13		-.12		.06	
Total R²		.10^b		.13^a		.07		.14		.15^c		.12^c		.14^c		.41^c

^a $p < .05$; ^b $p < .01$; ^c $p < .001$ ¹ Note: N for analyses involving strain=286; N for analyses involving emotional exhaustion and cynicism = 145; N for analyses involving professional efficacy=127; N for analyses involving vigor, dedication, and absorption=283; N for analyses involving positive mood=286.

accounted for a significant amount of unique variance in these outcomes. Specifically, psychological detachment was related to vigor ($\beta = -.13, p < .01$), dedication ($\beta = -.21, p < .01$) and absorption ($\beta = -.13, p < .05$). Control was related to strain ($\beta = -.19, p < .01$), vigor ($\beta = .18, p < .01$), dedication ($\beta = .26, p < .001$) and absorption ($\beta = .20, p < .01$)⁴.

Coping and Recovery

To examine whether coping and recovery are separate constructs (Hypothesis 3), I used an exploratory procedure. This analysis was selected, as opposed to a confirmatory analysis, for two reasons. First, I wanted to prevent misspecification of the number of factors (Kelloway, 1995). Several of the recovery scales are newly developed and therefore the factor structure is still tentative. Furthermore, the theorized factor structure of the brief coping scale has not been consistently found in the literature (e.g., Carver, 1997). Therefore, it is difficult to specify the number of factors that should provide the best fit for these two constructs. Second, I was interested in examining how these constructs overlap rather than confirming a specified factor structure. That is, I was interested in identifying any scales that were loading or cross-loading on a non-hypothesized factor. One advantage to exploratory procedures used in scale development is that they allow for loadings on non-hypothesized factors (Kelloway, 1995).

Therefore, exploratory principal components analysis using an orthogonal varimax rotation was conducted using the ten recovery subscales and the four coping

⁴ Because the existing and new subscales were combined to create the three higher-order scales, these analyses were not conducted with the three higher-order scales.

subscales.⁵ The analysis revealed four eigenvalues over 1, accounting for 59.85% of the variance in the solution. The Scree test (Cattell, 1966) suggested that a two-component solution may be appropriate (see Figure 3). The coping and the recovery scales loaded on distinct factors in both the four-component and the two-component solutions. However, the two-component solution is reported because it is most parsimonious and reflects the theory of separate coping and recovery factors overall. The two-component model accounted for 42.94% of the variance in the solution. Although most communalities were moderate in size (e.g., $\sim .5$) some were very low (e.g., $\sim .2$; see Table 7). Examination of the rotated component matrix of the two-component solution revealed that the recovery scales loaded on the first component (loadings ranged from .42 to .82) and the coping scales loaded on the second component (loadings ranged from .34 to .78; see Table 8). Interestingly, although the maladaptive coping scale loaded on the coping component (loading = .34), it also loaded on the “recovery” component (loading = -.32). This evidence suggests recovery and coping appear to be distinct constructs; however, it also suggests that recovery is negatively related to maladaptive coping⁶.

I conducted eight hierarchical regressions to examine whether recovery accounted for additional variance in strain and motivational outcomes, after controlling for coping (Hypothesis 4; see Table 8), based on all of the study outcomes: strain,

⁵ Past research does not suggest a strong relationship between these constructs (e.g., Sonnentag & Fritz, 2007). Likewise, in this analysis the factors were not strongly correlated. Therefore, an orthogonal rotation was used.

⁶ When this analysis was conducted with the three higher-order recovery scales and the coping scales the results were similar. The higher-order recovery scales loaded on the first component, the problem-focused, emotion-focused, and cognitive-focused coping scales loaded on the second component, and the maladaptive coping scale loaded onto the third component. A full description of results can be found in Appendix I.

burnout (emotional exhaustion, cynicism, and professional efficacy), positive mood, and engagement (absorption, dedication, and vigor). For all of the analyses, the four coping subscales were entered in the first step (i.e., problem-focused coping, emotion-focused coping, cognitive-focused coping, and maladaptive coping), the original recovery subscales were entered in the second step (i.e., psychological detachment, relaxation, mastery, control), and the six new recovery subscales were entered in the third step (i.e., planning, physical activity, social affiliation, hope/optimism, fun/humour, and self-reward).

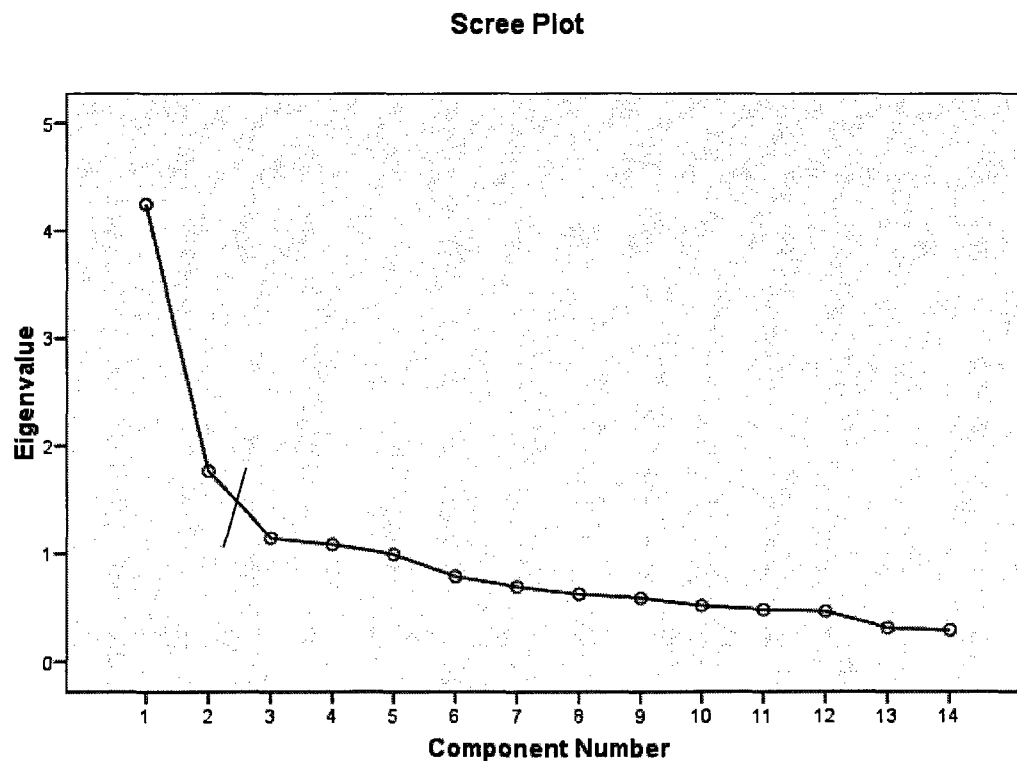


Figure 3. Scree Plot for the Principal Components Analysis of Recovery and Coping Subscales.

Table 7.

Communalities and Rotated Component Matrix for Principal Components Analysis of Recovery & Coping Subscales (N = 284).

Subscales	Communalities (Extraction)	Component Loadings	
		1	2
Psychological Detachment	.19	.42	-.11
Relaxation	.56	.73	-.17
Mastery	.34	.55	.18
Control	.46	.67	-.11
Planning	.26	.44	.26
Social Affiliation	.56	.75	.02
Physical Activity	.29	.51	.16
Fun/Humour	.67	.82	.09
Hope/Optimism	.50	.66	.25
Self-Reward	.48	.69	.09
Problem-Focused Recovery	.29	.18	.51
Emotion-Focused Recovery	.61	-.02	.78
Cognitive-Focused Recovery	.60	.07	.77
Maladaptive Recovery	.22	-.32	.34

Note: Factor loadings above .32 are bolded and italicized.

When entered in the first step, the four coping subscales accounted for a significant amount of variance in strain ($R^2 = .15$, $p < .001$), emotional exhaustion ($R^2 = .07$, $p < .05$), cynicism ($R^2 = .10$, $p < .01$), vigor ($R^2 = .05$, $p < .05$), dedication ($R^2 = .06$, $p < .01$), and positive mood ($R^2 = .09$, $p < .001$). Examination of the specific beta weights revealed maladaptive coping accounted for most of the variance in these outcomes. Maladaptive coping was positively related to strain ($\beta = .35$, $p < .001$), emotional exhaustion ($\beta = .19$, $p < .05$), and cynicism ($\beta = .32$, $p < .001$), and negatively related to professional efficacy ($\beta = -.20$, $p < .05$), vigor ($\beta = -.20$, $p < .01$), absorption ($\beta = -.13$, $p < .05$), dedication ($\beta = -.25$, $p < .001$), and positive mood ($\beta = -.25$, $p < .001$). Problem-

focused coping was also positively associated with strain ($\beta = .14, p < .05$). Finally, cognitive coping was related positively to positive mood ($\beta = .16, p < .05$). This was the only relationship that indicated a positive influence of coping styles on employee strain and motivation.

When entered in the second step, the four original recovery subscales accounted for a significant amount of additional variance in strain ($R^2_{change} = .03, p < .05$), vigor ($R^2_{change} = .08, p < .001$), absorption ($R^2_{change} = .08, p < .001$), dedication ($R^2_{change} = .07, p < .001$), and positive mood ($R^2_{change} = .23, p < .001$). Each of recovery subscales accounted for unique variance in at least one outcome: Psychological detachment was negatively related to all of the absorption and dedication scales (β 's were .13 and .22, respectively). Control was negatively related to strain ($\beta = -.14, p < .05$) and positively related to engagement outcomes and positive mood (β 's ranged from .19 to .26, $p < .01$). Both relaxation and mastery were positively related to positive mood (β 's were .17 and .26, $p < .01$, respectively).

When entered in the third step, the six new recovery subscales accounted for a significant amount of additional variance in vigor ($R^2_{change} = .05, p < .05$), dedication ($R^2_{change} = .05, p < .05$), and positive mood ($R^2_{change} = .11, p < .001$). For the most part, physical activity and fun/humour accounted for the additional variance in the outcomes. Physical activity was negatively related to strain ($\beta = -.16, p < .001$) and positively related to engagement outcomes and positive mood (β 's ranged from .16 to .22, $p < .05$). Fun/Humour was related to dedication and positive mood (β 's were .25 and .27, $p < .01$, respectively).

As a secondary analysis, and to complete a redundancy analysis, I assessed the incremental validity of coping above and beyond recovery for all study outcome variables (see Appendix J). A redundancy analysis includes conducting both the hierarchical regression examining the incremental validity of the recovery subscales over and above the coping subscales and the hierarchical regression examining the incremental validity of the coping subscales over and above the recovery subscales. This set of analyses allows for the assessment of the unique variance accounted for in the strain and motivational outcomes by coping subscales and recovery subscales. If either the coping subscales or the recovery subscales do not account for unique variance in the strain and motivational outcomes than it suggests these scales may not be useful (or may be redundant).

For the second set of analyses, the four original recovery subscales were entered in the first step (i.e., psychological detachment, relaxation, mastery, control), the six new recovery subscales were entered in the second step (i.e., organization, physical activity, social affiliation, hope/optimism, fun/humour, and self-reward), and the four coping subscales were entered in the third step (i.e., problem-focused coping, emotion-focused coping, cognitive-focused coping, and maladaptive coping).

When entered in the first step, the four original recovery subscales accounted for a significant amount of variance in strain ($R^2 = .07, p < .01$), professional efficacy ($R^2 = .08, p < .05$) vigor ($R^2 = .10, p < .001$), absorption ($R^2 = .08, p < .001$), dedication ($R^2 = .09, p < .001$), and positive mood ($R^2 = .29, p < .001$). When entered in the second step, the six new recovery subscales accounted for a significant amount of additional variance in vigor ($R^2_{change} = .05, p < .05$), dedication ($R^2_{change} = .05, p < .05$), and positive

mood ($R^2_{change} = .12, p < .05$). When entered in the third step, the four coping subscales accounted for a significant amount of additional variance in strain ($R^2_{change} = .11, p < .001$), emotional exhaustion ($R^2_{change} = .07, p < .05$), cynicism ($R^2_{change} = .08, p < .05$), dedication ($R^2_{change} = .05, p < .01$), and positive mood ($R^2_{change} = .02, p < .05$)⁷.

⁷ When the same series of analyses was conducted with the three higher-order scales, the results were similar: The three higher-order recovery scales accounted for a significant amount of additional variance in all outcomes, except cynicism. When the reverse analysis was conducted, the four coping subscales accounted for a significant amount of additional variance in all outcomes, except professional efficacy. See Appendix K for a full description of the results.

Table 8.

Summary of the Hierarchical Regression Analyses Demonstrating the Incremental Prediction of Recovery Subscales Above and Beyond Coping Variables on Study Outcomes.¹

Predictor	Strain		Emotional Exhaustion		Cynicism		Professional Efficacy		Vigor		Absorption		Dedication		Positive Mood	
	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
<i>Step 1</i>																
Problem-focused	.14 ^a	.15 ^c	.09	.07 ^a	.05	.10 ^b	.10	.07	-.02	.05 ^b	-.05	.02	-.08	.06 ^b	.06	.09 ^c
Emotion-focused	.08		.15		.01		.12		-.07		.05		.02		.01	
Cognitive-focused	-.01		-.13		-.07		.02		.09		-.07		.02		.16 ^a	
Maladaptive	.35 ^c		.19 ^a		.32 ^c		-.20 ^a		-.20 ^b		-.13 ^a		-.25 ^c		-.25 ^c	
<i>Step 2</i>																
Problem-focused	.15 ^b	.03 ^a	.12	.05	.07	.02	.07	.05	-.05	.08 ^c	-.06	.08 ^c	-.09	.07 ^c	.00	.23 ^c
Emotion-focused	.08		.17		.02		.11		-.05		.06		.03		.03	
Cognitive-focused	.00		-.11		-.02		-.06		.06		-.08		.02		.12	
Maladaptive	.30 ^c		.13		.31 ^c		-.16		-.16 ^a		-.13 ^a		-.23 ^c		-.14 ^a	
Psych. Detachment	-.01		-.16		-.01		-.06		-.12		-.21 ^b		-.13 ^a		-.06	
Relaxation	-.07		.02		.10		-.02		-.01		-.09		-.07		.17 ^c	
Mastery	.02		-.10		-.11		.17		.15 ^a		.11		.06		.26 ^c	
Control	-.14 ^a		-.09		-.10		.17		.20 ^b		.19 ^b		.25 ^c		.26 ^c	
<i>Step 3</i>																
Problem-focused	.16 ^b	.02	.18 ^a	.07	.08	.02	.04	.05	-.07	.05 ^a	-.08	.04	-.11	.05 ^a	-.04	.11 ^c
Emotion-focused	.08		.13		.02		.10		-.04		.08		.05		.02	
Cognitive-focused	-.01		-.09		.00		-.10		.06		-.08		-.01		.09	
Maladaptive	.31 ^c		.17		.30 ^b		-.15		-.17 ^b		-.13 ^a		-.23 ^c		-.15 ^b	
Psych. Detachment	-.02		-.12		-.03		-.04		-.13 ^a		-.22 ^b		-.15 ^a		-.06	
Relaxation	-.05		-.08		.15		-.09		-.00		-.05		-.09		.05	
Mastery	.02		-.09		-.08		.12		.09		.08		-.01		.13 ^a	

Continued on next page.

Predictor	Strain		Emotional		Cynicism		Professional Efficacy		Vigor		Absorption		Dedication		Positive Mood	
	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
<i>...continued</i>																
Step 3		.02		.07		.02		.05		.05 ^a		.04		.05 ^a		.11 ^c
Problem-focused	.16 ^b		.18 ^a		.08		.04		-.07		-.08		-.11		-.04	
Emotion-focused	.08		.13		.02		.10		-.04		.08		.05		.02	
Cognitive-focused	-.01		-.09		.00		-.10		.06		-.08		-.01		.09	
Maladaptive	.31 ^c		.17		.30 ^b		-.15		-.17 ^b		-.13 ^a		-.23 ^c		-.15 ^b	
Psych. Detachment	-.02		-.12		-.03		-.04		-.13 ^a		-.22 ^b		-.15 ^a		-.06	
Relaxation	-.05		-.08		.15		-.09		-.00		-.05		-.09		.05	
Mastery	.02		-.09		-.08		.12		.09		.08		-.01		.13 ^a	
Control	-.13		-.06		-.07		.08		.16 ^a		.18 ^a		.22 ^b		.16 ^b	
Planning	.01		-.17		-.09		.10		.08		.04		.03		.06	
Physical activity	-.16 ^c		-.15		-.02		.07		.20 ^b		.16 ^a		.16 ^c		.22 ^c	
Social Affiliation	-.01		.22		.13		.09		-.07		-.01		-.07		-.12	
Hope/Optimism	.07		-.05		.10		.05		-.10		-.10		-.07		.05	
Fun/Humour	-.03		-.06		-.18		.11		.13		.10		.25 ^b		.27 ^c	
Self-Reward	.01		.14		-.08		-.04		-.00		-.13		-.11		.08	
Total R ²		.21 ^c		.18 ^a		.14		.16		.17 ^c		.14 ^c		.18 ^c		.43 ^c

^a $p < .05$; ^b $p < .01$; ^c $p < .001$

¹ Note: N for analyses involving strain=280; N for analyses involving emotional exhaustion and cynicism = 141; N for analyses involving professional efficacy=123; N for analyses involving vigor, dedication, and absorption=276; N for analyses involving positive mood=279.

Recovery and the Job Demands-Resources Model

Next I examined whether recovery subscales had stronger relationships with motivational outcomes (i.e., positive mood, vigor, dedication, absorption) than with strain outcomes (i.e., strain, emotional exhaustion, cynicism, professional efficacy; Hypothesis 5). I used a structural equation modeling approach that enabled the use of an omnibus test, thereby reducing the risk of Type 1 error. Because the strain indicators (i.e., strain, emotional exhaustion, cynicism, and professional efficacy) and the motivation indicators (i.e., vigor, dedication, absorption, and positive mood) are not highly correlated (within the groupings) I could not use latent factors representing these constructs in my model. Therefore, I selected two representative scales: strain and vigor (see Figure 4)⁸. In addition, to reduce the number of estimated pathways in this model, I used the higher-order recovery model (i.e., psychological detachment, emotional recovery and directed recovery).

First, I tested a model with recovery predicting both strain and vigor, allowing the all loadings to be estimated freely. For this unconstrained model, the CFI was .91, and the RMSEA was .075 (PCLOSE = .000) indicating an adequate fit. Next, I tested the same model, but for each recovery variable the pathways to motivation and strain were constrained to be equal (see Figure 7). For the constrained model, the CFI was .87, and the RMSEA was .09 (PCLOSE = .000) indicating a poor fit. I compared the unconstrained and the constrained and these two models using a chi-square difference test to assess whether the unconstrained model was a better fit than the constrained model. The unconstrained model was a significantly better fit than the constrained

⁸ The pattern of results with strain and vigor is consistent when using any of other burnout, engagement, and mood outcomes.

model ($\chi^2_{\text{difference}} = 56.88, df=3, p<.001$), suggesting that the relationships between recovery and strain and recovery and vigor are not equal.

Inspection of the standardized beta weights for these pathways suggests that the relationship between recovery and vigor (standardized loadings range from -.18 to .86) tends to be stronger than the relationships between recovery and strain (standardized loadings range from .00 to -.52). The strength of the relationship between directed recovery and vigor was greater than that of directed recovery and strain (standardized loadings were .86 and -.52, respectively). Interestingly, the strength of the relationship between emotional recovery and vigor was greater than the relationship between emotional recovery and strain (standardized loadings were -.42 and .28 respectively); however, these relationships were not in expected directions. That is, the direction of the relationship between emotional recovery and vigor was negative and, although not significant, the direction of the relationship between emotional recovery and strain was positive. These relationships were opposite to what was expected based on theory and the simple correlations in this study.

A similar trend emerged in the relationships between psychological detachment and these outcomes. That is, the relationship between psychological detachment and vigor was greater than that of psychological detachment and strain (standardized loadings were -.18 and .00, respectively); however, the direction of the relationship between psychological detachment and vigor was negative, and there was no relationship between psychological detachment and strain. This negative relationship between psychological detachment and vigor was expected based on the simple correlations.

Inspection of the simple correlations between the three higher-order recovery subscales and both strain and vigor suggests that there may be a suppression effect occurring in this analysis. Tabachnick and Fidell's (2001) posited that there are two criteria that suggest the presence of a suppressor variable. First, the beta weight must be significant. Second, the absolute value of the correlation must be substantially smaller than the beta weight or the correlation and the beta weight have opposite signs. Table 9 adopts these criteria to assess the presence of a suppressor. It is clear from the pattern of relationships illustrated in this table that a suppressor variable may exist.

Therefore, to identify the suppressor variable, I repeated the analysis three times; each time deleting the paths between individual IVs (i.e., either psychological detachment, emotional recovery, or directed recovery) and strain and motivation. From these analyses, it appears that directed recovery was working as a suppressor variable. When the paths between directed recovery and strain and directed recovery and vigor were removed from the analysis, the standardized loadings for the paths from emotional recovery and physiological detachment were more consistent with the simple correlations. For example, the standardized loading for the relationship between emotional recovery and strain went from .23 in the previous model to $-.20, p < .01$ in this new model. Likewise, standardized loading for the relationship between emotional recovery and vigor went from $-.43, p > .05$ in the previous model to $.30, p < .001$ in this new model. Furthermore, consistent with the simple correlations between psychological detachment and strain and vigor, the path loadings between psychological detachment and strain and vigor were insignificant in this new model.

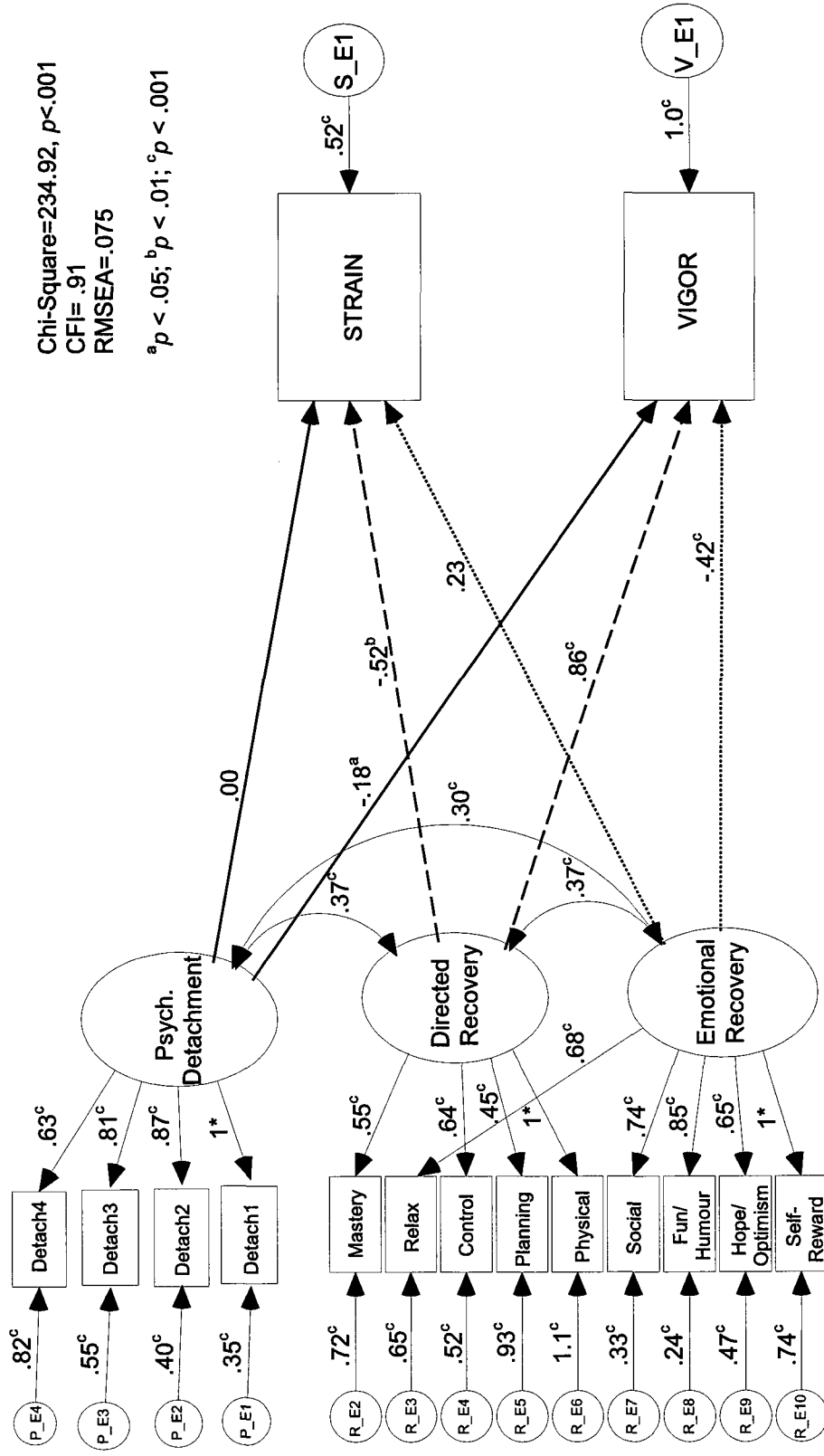


Figure 4. The above figure illustrates the Structural Equation Model representing the relationship between recovery and strain and recovery and vigor. Standardized loadings for the unconstrained model are presented. Paths that were constrained to be equal in the unconstrained model are represented with the same lines. The solid lines represent the relationship between psychological detachment and strain and psychological detachment and vigor. The dashed lines represent the relationship between directed recovery and strain and directed recovery and vigor. The dotted lines represent the relationship between emotional recovery and strain and emotional recovery and vigor.

Table 9.

Assessing the Evidence for Suppression According to Tabachnick and Fidell's (2001) Criteria.

	STRAIN			Suppression?			VIGOR			Suppression?		
	Simple Correlation	Standardized Beta weight	Beta is significant	Opposite signs	Beta > correlation		Simple Correlation	Standardized Beta weight	Beta is significant	Opposite signs	Beta > correlation	
Psychological Detachment	-.11	.00					-.01	-.18 ^a	x			x
Emotional Recovery	-.18 ^b	.23					.21 ^c	-.42 ^c	x	x		
Directed Recovery	-.19 ^b	-.52 ^c	x		x		.33 ^c	.86 ^c	x			x

To examine these relationships in greater detail with all of the strain and motivational outcomes, I used R Version 2.10.1 statistical software (R Development Core Team, 2009) to conduct post-hoc tests of dependent correlations (see Table 10). To run a complete set of analyses with all ten of the recovery subscales would require 120 analyses. Therefore, to reduce the number of analyses, I examined the correlations between the three higher-order recovery scales and the outcomes. Given that it was still necessary to perform 48 analyses, the experiment-wise alpha was set to $p < .10$, such that each analysis was assessed at $p < .002$.

The expected relationships between strain variables (except professional efficacy) and motivational outcomes are opposite. That is, recovery should be negatively related to strain (except professional efficacy) and positively related to motivation. Because I expected opposite relationships and I was concerned about determining the magnitude of any absolute difference between these correlations, I modified the correlations to be used in the tests of dependent correlation. The correlations between recovery and strain outcomes (except professional efficacy) were reversed (e.g., positive relationships became negative). In addition, in these cases, the correlations between the strain and motivational outcomes were also reversed (e.g., negative relationships were treated as positive). These changes allowed for testing the magnitude of any differences between these correlations, without confounding the results with the expected directional differences.

A similar pattern of results emerged for both the emotional and directed recovery scales. The correlations between these recovery experiences and positive mood tended to be stronger than correlations between recovery experiences and the

strain outcomes. The correlations between emotional recovery and positive mood were significantly stronger than correlations between emotional recovery and all of the strain outcomes (t 's ranged from -3.24 to -5.44 , $p < .002$). The correlations between directed recovery and positive mood were significantly stronger than correlations between emotional recovery and two strain outcomes: strain ($t = -5.63$, $p < .001$) and cynicism ($t = -3.71$, $p < .001$). The correlations between emotional and directed recovery experiences and all other motivational outcomes were not significantly stronger than the correlations between these recovery experiences and the strain outcomes (i.e., t 's ranged from $.00$ to 3.07 , $p > .002$).

A different pattern of results emerged for the correlations involving the psychological detachment scale. The psychological detachment scale was not related to motivational outcomes in the expected direction. That is, psychological detachment was negatively related to two motivation scales (positive mood: $r = -.15$, $p < .05$; absorption: $r = -.17$, $p < .01$). It should be noted that the unmodified correlation coefficients between psychological detachment and strain and psychological detachment and motivational outcomes are not significantly different from one another (e.g., psychological detachment and strain: $r = -.09$ and psychological detachment and positive mood: $r = -.15$). However, when the expected direction of the relationship is considered in the test of dependent correlations (i.e., correlations with strain are reversed) a difference emerges (i.e., $.09$ to $-.15$).

Table 10.

Summary of the Test of Dependent Correlation Analyses Examining whether the Recovery Experiences are More Strongly Related to Motivational Outcomes than to Strain Outcomes.

Recovery Scale	Motivational Outcomes	Strain Outcomes			
		Strain	Emotional Exhaustion	Cynicism	Professional Efficacy
		<i>t</i>	<i>t</i>	<i>t</i>	<i>t</i>
<i>Psychological Detachment</i>	<i>Mood</i>	3.36 ^b	2.75 [†]	1.96	2.17
	<i>Vigor</i>	1.62	2.25	.82	.88
	<i>Dedication</i>	2.35	2.46	1.57	1.65
	<i>Absorption</i>	3.57 ^b	2.87 [†]	2.18	2.35
<i>Emotional Recovery</i>	<i>Mood</i>	-5.44 ^b	-4.58 ^b	-4.17 ^b	-3.24 ^a
	<i>Vigor</i>	.14	-1.12	.00	1.02
	<i>Dedication</i>	.98	-.32	.79	1.97
	<i>Absorption</i>	2.74 [†]	.87	1.97	3.07 [†]
<i>Directed Recovery</i>	<i>Mood</i>	-5.63 ^b	-2.94 [†]	-3.71 ^b	2.65 [†]
	<i>Vigor</i>	-1.70	-.65	-.99	.12
	<i>Dedication</i>	-.42	.43	.13	1.33
	<i>Absorption</i>	.28	.81	.63	1.65

^a $p < .002$; ^b $p < .001$; [†] $p < .01$

Study 2: Discussion

The goal of Study 2 was to examine the relationship of the REQ-Expanded developed in Study 1 with coping, strain, and motivational outcomes, and to provide further evidence of the reliability and validity for this scale. Specifically, the objectives of this study were to establish the factor structure and internal reliability of the REQ-Expanded and determine how the new revised scale relates to other theoretically relevant constructs. The results provide evidence for the reliability and construct validity of the REQ-Expanded.

REQ-Expanded Factor Structure

An exploratory principal components analysis provided evidence that the existing and new recovery items clustered into ten distinct and reliable factors (i.e., four existing scales, five new scales, and a two-item “planning” scale; Hypothesis 1). This factor structure is almost identical to the factor structure derived from the content validation process in Study 1. That is, the factor structure included: psychological detachment, relaxation, mastery, control, physical activity, social affiliation, hope/optimism, fun/humour, self-reward. There was also one additional subscale that emerged: The “planning” items that were included as a part of the control subscale clearly loaded on to a separate factor. These results suggest that these planning items are conceptually different than the items that currently make up the control scale.

Although, measuring a construct with two-items is not ideal, I decided to maintain this subscale for several reasons. First, the planning concept emerged in 50% of the focus groups conducted. Therefore, it seemed to be an integral part of the

recovery domain. Second, there is some support for planning or organization-related activities being used for improving mood. For example, Thayer et al (1994) found that some people, especially older adults, used activities such as “tending to chores” as a means of improving mood. Parkinson and Totterdell (1999) also found that activities such as “mending things”, “sorting out files”, “keeping busy” and “doing something I’ve been putting off” are used to improve mood. Finally, both one-item and two-item measures have been used successfully in the past especially when the construct being operationalized is fairly precise (e.g., Barling, Kelloway, & Iverson, 2003; Carver, 1997; Kelloway, Francis, Catano, & Teed, 2007; Kroenke, Spitzer, & Williams, 2003; Rammstedt & John, 2007; Wanous, Reichers, & Hudy, 1997). In the current study, the two planning items were highly correlated ($r = .77$). Future research, however, should explore this construct further. It is possible that the existing control scale could be revised to include items similar to those used to measure planning in this study or additional items could be added to the existing planning items.

All but one of the other REQ-Expanded items loaded as expected. However, two items cross-loaded on the fun/humour and hope/optimism scales. It is not clear whether this overlap was due to item selection, or whether these constructs should not be considered distinct. A post-hoc principal components analysis conducted with both the fun/humour and the hope/optimism items indicated that two components clearly emerged, with the items loading on their respective scales. Future research should explore whether these subscales can be further differentiated

A higher-order three factor recovery structure emerged when I conducted a principal components analysis on the ten recovery subscales. The first factor measured

emotional recovery and it included the subscales of relaxation, social, fun/humour, hope/optimism, and self-care subscales. The second factor measured directed recovery and it included mastery, control, planning, and physical activity. The third factor included the psychological detachment subscale only.

In labeling the first two components (i.e., emotional recovery and directed recovery) I tried to identify the over-riding themes. Interestingly, there seems to be parallels with these two recovery components and the two coping categories that consistently emerge in the coping literature (e.g., Lazarus & Folkman, 1984). That is, emotional recovery and directed recovery seem conceptually similar to the emotion-focused and problem-focused coping dimensions. Similar to emotion-focused coping, emotional recovery involves engaging in more passive activities that often involve making one's self feel better (i.e., relaxation, social, fun/humour, hope/optimism, and self-care). Similar to problem-focused coping, directed recovery involves engaging in proactive activities that may be goal-oriented (e.g., mastery, control, planning, and physical activity). Although, this parallel seems to be strictly conceptual (i.e., recovery and coping constructs were not highly related in this study), the similarity of the higher-order recovery scales to the established coping themes provides some theoretical support for the existence of this factor structure.

This hierarchical factor structure (i.e., three broad recovery categories and ten narrow recovery facets) may be advantageous in that it provides an opportunity for researchers to select the appropriate level of recovery specificity, depending on research goals. Indeed, when reviewing the stress literature, Sonnentag and Frese (2003) noted that researchers should devote more attention to the specificity of the

stressors, resources, and strain. Research on the bandwidth-fidelity tradeoff popularized in the personality literature (e.g., Ones & Viswesvaran, 1996) may help inform this selection. Essentially, bandwidth-fidelity “tradeoff” suggests that “broad” scales tend to predict outcomes with moderate validity, but the findings tend to be more generalizable. Conversely, “narrow” scales tend to predict specific outcomes with high validity. Research in the personality domain also suggests that, in order to maximize predictive validity, the “bandwidth” of the predictor and the criterion should match (Hogan & Roberts, 1996; Ones & Viswesvaran, 1996; Schneider, Hough & Dunnette, 1996). That is, broad predictors should be used to predict broad criteria, whereas narrow predictors should be used to predict narrow criteria.

Extrapolating from this literature, one may assume that broad recovery scales may be best employed when using other broad constructs and may offer more generalizability. For example, the three higher order recovery scales may be better when predicting broad outcomes, such as general health and well-being. Narrow recovery subscales, on the other hand, may be best employed when using other narrow constructs and may offer increased specificity. For example, the ten recovery subscales may offer more precision when exploring the relationship between recovery and specific jobs or individual difference variables (i.e., personality traits, personal values). Future research should explore the stability of this higher-order factor structure and test the bandwidth-fidelity theory with recovery measures.

Incremental Validity of the New Recovery Scales

The REQ-Expanded was related to several theoretically relevant constructs. The existing recovery experiences (i.e., psychologically detachment, relaxation, mastery

and control) jointly accounted for a significant amount of variance in strain, emotional exhaustion, professional efficacy, vigor, absorption, dedication, and positive mood (Hypothesis 2a). Examination of the beta weights for this step revealed that, for the most part, these recovery experiences were negatively related to strain and emotional exhaustion and positively related to professional efficacy, vigor, absorption, dedication, and positive mood.

Interestingly, however, psychological detachment was negatively related to engagement outcomes. Thus, those who reported engaging in a high degree of psychological detachment during non-work time reported feeling less engaged at work. This finding is not consistent with past research. For example, Kühnel et al. (2009) and Siltaloppi et al. (2009) both found that psychological detachment was positively related to work engagement. One difference between these studies and the current study is that these previous studies were conducted with European samples (i.e., Germany and Switzerland; Finland) and the current study was conducted with a Canadian sample. Perhaps there are cultural differences that account for these divergent findings. For example, detachment from work is not traditionally promoted or rewarded in the North American culture (e.g., Robinson, 2000); therefore, those who engage in more detachment might be those employees who are also less engaged in their work, whereas those who tend to be more engaged in work tend to detach less often. Conversely, detachment from work may be more accepted and even promoted in European cultures. Indeed, cross cultural research conducted by Spector and colleagues (Spector, Allen, Poelmans, Lapierre, Cooper, O'Driscoll, et al., 2007) has found that

job demands tend to be more strongly associated with work interference with family in individualistic (Western) cultures, than more collectivistic cultures.

It is also possible that complex relationships exist between psychological detachment and outcomes such as engagement. Fritz et al. (in press) found evidence for a curvilinear relationship between psychological detachment and job performance, such that job performance was highest at moderate levels of psychological detachment. It is possible that the relationship between psychological detachment and engagement is similar. Future research should explore this possibility.

The new recovery subscales offered incremental validity when predicting vigor, dedication, and positive mood (i.e., three of the four motivation scales; Hypothesis 2b), after controlling for the existing four recovery subscales. Specifically, physical activity and fun and/or humorous experiences during non-work time were the new recovery experiences that tended to be related to enhanced mood and engagement in work, even after controlling for psychological detachment, relaxation, mastery, and control experiences. The new recovery experiences did not, however, offer incremental validity in the prediction of the strain outcomes (i.e., general health, emotional exhaustion, cynicism, professional efficacy) or absorption. The significant prediction of more motivational outcomes than strain outcomes is consistent with the dual process theory associated with the job demands-resources model of work stress (Bakker & Demerouti, 2007).

It should be noted that the sample size for the analyses conducted with the burnout scales was much smaller. Therefore, although the new recovery activities accounted for just as much additional variance in emotional exhaustion (i.e., 6%) and

professional efficacy (i.e., 5%) as they did in vigor and dedication, these values were not significant. I calculated the power of the final step of these analyses post-hoc with G*Power Version 3.1.2 (Faul, Erdfelder, Lang, & Buchner, 2007). The power for the incremental prediction of the new scales was fairly low for two of the outcomes: cynicism (.42) and professional efficacy (.73). However, the power was fairly high for the analysis involving emotional exhaustion (.87). Future research should examine these relationships in more detail with a larger sample.

Recovery and Coping

Given the semantic overlap between recovery and coping, it is important to distinguish these two constructs. From a theoretical standpoint, several differences between coping and recovery can be identified. For example, the traditional coping literature tends to focus on dealing with stress and strain, whereas the recovery literature seems to focus on restoring resources, increasing well-being, and creating positive psychological states. Furthermore, recovery can be viewed as a proactive attempt to restore resources and prevent longer-term strain (i.e., primary treatment), where as coping can be viewed as a more secondary or tertiary type of intervention in that it is typically in response to a problem.

Results from the present study support this theoretical perspective. The results illustrate that coping and recovery appear to be distinct constructs (Hypothesis 3).

When entered together in a principal components analysis, recovery and coping subscales loaded on separate components. These results support and extend Sonnentag and Fritz's (2007) work indicating that recovery is distinct from Carver et al.'s (1989) COPE subscales.

Interestingly, maladaptive coping, which is characterized by avoidance-type strategies, such as substance abuse denial, self-blame, and behavioural disengagement, cross loaded negatively on the recovery factor. These results are particularly interesting because recovery experiences tend to be characterized by psychological detachment, which, by definition, involves “switching off mentally.” Therefore, one might mistakenly assume that detachment is similar to maladaptive coping strategies such as denial and behavioural disengagement. In fact, inspection of the correlation matrix shows only negative (or non-significant) correlations between the recovery experiences and maladaptive coping. Future research should examine how avoidance-based strategies and psychological detachment differ. Perhaps psychological detachment involves a more proactive approach (i.e., making an attempt to distance oneself from work) and perhaps it is more time-bound (i.e., only disengaging during non-work time).

I also examined whether or not recovery experiences accounted for incremental validity above and beyond coping (Hypothesis 4). When entered first, coping accounted for a significant amount of variance in almost all of the strain and motivational outcomes, except for professional efficacy and absorption. Interestingly, maladaptive coping was responsible for most of the relationship between coping subscales and these outcomes. This is consistent with other studies which have found maladaptive styles of coping tend to be the most predictive of outcomes (e.g., Day & Livingstone, 2001).

When entered after coping, the four original recovery experiences accounted for additional variance in strain, vigor, absorption, dedication, and positive mood beyond

the coping scales. Furthermore, the six new recovery experiences accounted for additional variance in strain, vigor, and dedication and positive mood beyond the coping scales and the four original recovery experiences. Again, physical activity and fun/humorous experiences accounted for most of the additional variance in these outcomes. Specifically, physical activity during non-work time was related to decreased strain and increased motivation during non-work time. Engaging in fun and/or humorous activities during non-work time was related to dedication at work and positive mood.

It should be noted again that the sample size for the analyses conducted with the burnout scales was much smaller. Therefore, although the existing recovery activities accounted for between 2% and 5% of additional variance in burnout outcomes and the new recovery activities accounted for between 2% and 7% of additional variance in the burnout outcomes, this additional variance was not significant. Post-hoc power analyses were conducted with G*Power Version 3.1.2 (Faul et al., 2007) to assess the power in these final two steps. The power for the incremental prediction of the existing scales was fairly low: emotional exhaustion (.75); cynicism (.39); and professional efficacy (.71). The power for the incremental prediction of the new scales was also low for two outcomes: cynicism (.42) and professional efficacy (.67). However, the power was fairly high for the analysis involving emotional exhaustion (.87).

It is noteworthy that coping styles tended to be positively related to strain and negatively related to engagement and positive mood, whereas recovery experiences tended to be negatively related to strain and positively related to engagement and

positive mood. This finding is not surprising given that one may actively engaging in coping strategies during difficult circumstances (which also may result in high strain and low motivation). However, this difference does illustrate another distinction between these two constructs. Finally, it should be noted these results are specific to the scale used in this study (i.e., Carver et al., 1989). Future research should examine the difference between other operational definitions of coping and recovery.

Recovery and the Job-Demands Resources Model

Based on the job-demands resources model dual process theory, recovery experiences were hypothesized to predict motivational outcomes (i.e., positive mood and engagement) to a greater extent than strain outcomes (i.e., general health and burnout). Structural equation modeling analyses revealed that the relationships between the recovery scales and a strain outcome (i.e., strain) were not the same magnitude as the relationships between the recovery scales and a motivational outcome (i.e., vigor). Examination of the beta weight for this model suggested that the relationships between recovery and vigor tended to be stronger than the relationships between recovery and strain, however, suppression effects made interpretation difficult.

Post-hoc tests of dependent correlations indicated that the relationship between emotional and directed recovery experiences and positive mood tended to be significant larger than the relationship between these scales and strain outcomes. This pattern of results was especially strong and consistent for emotional recovery, suggesting that engaging in recovery activities that require minimal directed effort (e.g., relaxation, social activities, hope/optimism, fun humour; self-reward) may be especially helpful in promoting mood compared to decreasing strain. However, for the

most part, the relationship between emotional and directed recovery and other motivational outcomes was not significantly different than the relationship between these outcomes and all of strain outcomes.

Interestingly, the relationship between psychological detachment and recovery and motivation tended to be either non-existent or in the opposite direction as expected. This finding suggests that psychological detachment has a different relationship with motivation than the other recovery constructs. As discussed above, this relationship could be specific to a Canadian culture, and therefore, should be further explored. Taken together, these findings provide only partial support for Hypothesis 5 and provide some evidence that recovery may act as a “resource” within the job-demands resource model, in that it predicts positive mood, to a greater extent than strain outcomes.

Limitations

These results should be interpreted in the context of the study’s methodological limitations. First, given that the data used in this study was cross-sectional (i.e., measurement context effects) and self-report (i.e., self-report bias) there is a concern that common method bias may inflate the results. There seems to be a consensus in the literature that method does affect measurement (Doty & Glick, 1998; Lindell & Whitney, 2001; Spector, 2006). However, Doty and Glick (1998) found that, in most cases, the bias due to common method “is probably not sufficiently large enough to invalidate many of our theoretical interpretations” (p. 400). In fact, Lance, Dawson, Birkelbach, and Hoffman (2010) recently demonstrated that the inflation of relationships due to common method is often counteracted by measurement error. In

fact, these authors claim that when measurement error is taken into account, common method correlations are very similar to true score correlations.

To reduce self-report bias, we ensured confidentiality of responses and anonymity of the data. This strategy should reduce evaluation apprehension and decrease the chance of social desirability responding (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In addition, several characteristics of the data provide evidence that the threat of common method bias is insubstantial. There are non-significant correlations between several variables in this study and the pattern of relationships appears to be consistent with past research (i.e., Sonnentag & Fritz, 2007). Furthermore, common method bias should artificially inflate relationships between the variables, making it more difficult to find incremental prediction or multi-factorial models. However, in this study, many of the constructs accounted for additional variance over and above other constructs and there was evidence to support several multi-factorial models (i.e., coping, recovery subscales, recovery higher-order scales). Indeed, the fact that confirmatory and exploratory factor analyses demonstrated that recovery and coping scales were more appropriately represented by multi-factor models as opposed to a single factor models provides some evidence against strong common method variance (i.e., Harman's single factor test). Although this procedure does not statistically control for common method variance, it demonstrates that common method does not account for all the variance in the data (Podsakoff et al., 2003).

Second, it is important to acknowledge that both samples in this study were convenience samples. The lack of true random selection used in this approach

jeopardizes the generalizability of the findings. However, both of the samples used in this study were diverse in terms of their demographic characteristics (e.g., gender and age) as well as their work history and experience (e.g., tenure, industry, occupation). Accordingly, the sample appears to capture a wide spectrum of the population.

Third, the methodology used in this study precludes conclusions about causal inference. That is, these data do not shed light on whether recovery causes reduced strain and increased motivational outcomes or whether experiencing increased motivation and a lack of strain results in engagement in more recovery-related activities.

Conclusion

In conclusion, Study 2 provided further evidence of the construct validity for the REQ-Expanded. There were three major findings in this study. First, the REQ-Expanded clustered into ten distinct factors and three higher-order factors. This factor structure included six new recovery subscales that are distinct and offer incremental prediction of several strain and motivational outcomes, over the existing recovery subscales. Second, REQ-Expanded was distinct from the construct of coping. Third, consistent with job-demands resources theory, emotional and directed recovery experiences tended to be better predictors of positive mood than of strain outcomes.

STUDY 3

Past research, as well as the results from Study 2, clearly indicate that recovery experiences are associated with positive personal and professional employee outcomes (e.g., Kühnel, et al., 2009; Siltaloppi et al., 2009; Sonnentag & Fritz, 2007; Sonnentag

et al., 2008; Sonnentag et al., 2010). However, we also know that Canadians are spending more time balancing life and work demands and less time on social and leisure activities (Canadian Index of Well-being, 2010; Duxbury & Higgins, 2003). Therefore, one practical question that has yet to be addressed in the recovery literature is whether or not individual recovery can be increased through an intervention program? Therefore, the purpose of this study was to examine the impact of a work-life balance intervention that incorporates recovery-related education and coaching on recovery and related outcomes.

In the only study examining factors that influence individual recovery, Sonnentag and Krueger (2006) found that people's expectations about their ability to benefit from recovery activities (i.e., recovery-related self-efficacy) can influence the extent to which they engage in recovery experiences. Specifically, Sonnentag and Krueger (2006) found that recovery-related self efficacy was related to psychological detachment, measured through both self reports and family-member ratings. However, to date, no one has tested whether recovery can be influenced through an intervention.

Related research does, however, suggest that employee-focused stress management programs tend to be effective for reducing stress and strain ($d=.53$; Richardson & Rothstein, 2008). Programs that involve a combination of strategies tend to be the most effective (Sonnentag & Frese, 2003; van der Klink et al., 2001). Therefore, the final goal of the proposed research is to examine whether recovery experiences can be increased through a stress management and work-life balance program (i.e., Achieving Balance in Life and Employment program; ABLE).

The ABLE Program and Recovery

The ABLE program is a 12-week coaching intervention designed to help employees manage stress and balance the demands of work and life. The program incorporates both cognitive-behavioural and relaxation strategies for dealing with stress and includes individually tailored education on practical topics such as time management, prioritization, work-life balance and, most importantly, daily recovery activities. Participants in the ABLE program are encouraged to implement recovery activities into their daily lives and coaches talk to participants about their specific recovery experiences every second week during the ABLE program. Accordingly, the ABLE program may increase participant engagement in recovery experiences.

Therefore, I hypothesize that:

Hypothesis #1: Individuals who participate in the ABLE program will report increased recovery experiences compared to individuals who do not participate in the ABLE program (i.e., wait-list control group).

The Mediating Role of Recovery

Results from Study 2 indicated recovery was related to motivational outcomes, and to some extent, recovery was also related to strain. It is hypothesized that any impact an intervention program (such as ABLE) has on motivational and strain outcomes may be partially due to the program's ability to increase recovery experiences. That is, recovery may mediate the relationship between intervention programs and strain and motivational outcomes.

From a theoretical standpoint, recovery experiences may mediate the impact of the ABLE program on strain and motivational outcomes. Employee strain and lack of

motivation has been associated with job demands and lack of job control (e.g., Demerouti, Bakker, de Jonge, Janssen, & Schaufeli, 2001). It has been theorized that the lack of opportunity to recover from job demands results in these employee strain reactions (e.g., Meijman & Mulder, 1998). However, engaging in recovery activities during non-work time can help employees escape from job demands and restore and accumulate resources (e.g., energy, mood; Meijman & Mulder, 1998; Sonnentag, 2001; Sonnetag & Fritz, 2007). Indeed, Sonnentag & Bayer, (2005) asserted that recovery is the “process opposite to the strain process that has been caused by exposure to stressors” (p. 396).

Furthermore, according to the transactional stress model (Lazarus & Folkman, 1984), perceived stress can lead to longer-term strain outcomes when a threat or stressor exceeds an individual’s ability to cope. However, these strain outcomes can be mitigated with the availability of appropriate resources. Given that recovery experiences restore energy and mood and allow an individual to recuperate from stress they may act as a resource and reduce the experience of physical, emotional, and behavioural strain outcomes.

There is also reason to believe that recovery may mediate this relationship from a practical standpoint. Participants in the ABLE program are coached to make behavioural and cognitive changes in their lives to help improve their work-life balance and decrease stress. Accordingly, participants are encouraged to incorporate a wide-variety of recovery experiences into their daily routine. For example, participants work with their coach to set their own personal recovery-related goals (e.g., exercise, take painting lessons, get organized, find more “me time”; spend more time with

friends/husband/kids; leave work at the office). It seems likely that incorporating these behavioural (e.g., mastery, physical activity, social affiliation; fun) and cognitive changes (e.g., psychological detachment, hope, control) will result in recuperative effects.

In summary, given that ABLE participants are encouraged to engage in recovery experiences on a daily basis and recovery experiences allow for daily restoration of resources, participants in the ABLE program should engage in more recovery experiences, which should, in turn, lead to decreased strain and increased motivation. That is, recovery experiences may mediate the impact of the ABLE program on strain and motivational outcomes. However, given that strain and motivational outcomes may have multiple causes, a full meditation effect is not probable (Baron & Kenny, 1986). Therefore, I hypothesize that:

Hypothesis #2: Recovery experiences will partially mediate the relationship between ABLE program participation (i.e., participating vs not participating) and strain and motivational outcomes.

Study 3: Methods

For Study 3 data were collected with a subset of the participants in the ABLE program who were surveyed in Study 2. The data from Study 2 was used in this study as Time 1 data (September, 2009). The Time 2 data were collected at the end of the ABLE program, 12 weeks after Time 1 data collection.

Participants. There were 102 participants (86 female; 16 male) who completed the survey at both Time 1 and Time 2. Approximately half of the participants were assigned to the ABLE treatment group (N=56: 46 female; 10 male) and the rest of the

participants were assigned to a wait-list control group (N=46: 40 female; 6 male). A true randomized design was not used because the entire sample of participants was not recruited in time to begin the program. Therefore, all participants were assigned to the treatment group until this group was full and then participants were assigned to a wait-list control group.

The average age of participants was 43.77 years (range: 20-63 years). They had a mean tenure of 9.2 years (range: 13 weeks to 35 years) and worked an average of 41.6 hours per week (range: 17.5 to 90). Participants were well educated; all but one participant completed high school and 79.0% had completed at least one college or university degree. Almost three quarters (74.0%) reported being married or common law and reported having at least one child.

Procedure. Time 2 survey data were collected electronically via LimeSurvey Version 1.85+ (LimeSurvey, 2009) from the participants who were enrolled in the ABLE stress management and work-life balance program. The Time 2 survey was administered at the end of the ABLE program, 12 weeks after the Time 1 survey. Participants were assigned to either the treatment or wait-list control group prior to the Time 1 data collection (Study 2). All participants were assigned to the treatment group until this group was full and then participants were assigned to a wait-list control group.

Measures. The same recovery, general health, burnout, engagement, and positive mood scales that were used at Time 1 (Study 2) were also used at Time 2.

Recovery Experiences. Recovery from work stress was assessed using the same 16-item Recovery Experience Questionnaire (REQ; Sonnentag & Fritz, 2007) and the

same 25 additional items created in Phase 1. Using a 5-point Likert-type scale (1=I do not agree at all; 5= I fully agree), respondents were asked to rate the extent to which they have been able to engage in recovery experiences over the past several weeks.

Confirmatory factor analysis in AMOS 7.0 (Arbuckle, 2006) was used to test the ten-factor recovery model established in Study 2 (Appendix L). The model did not meet Hu and Bentler's (1999) criteria for good fit. The CFI was .89 and the RMSEA was .08 (PCLOSE = .000). All items loaded highly and significantly on their theoretical factors (standardized loadings ranged from .70 to .98). Although this fit is not ideal, note that the sample size (N=102) does not meet the recommended case to variable ratio (5:1 to 10:1; Bentler & Chou, 1987; Kelloway, 1998).

All ten of the recovery experience subscales demonstrated high internal reliability at Time 2: (1) Psychological Detachment ($\alpha = .90$, with item-total correlations ranging from .63 to .86); (2) Relaxation ($\alpha = .94$, with item-total correlations ranging from .76 to .92); (3) Mastery ($\alpha = .92$, with item-total correlations ranging from .74 to .87); (4) Control ($\alpha = .90$, with item-total correlations ranging from .74 to .86); (5) Planning ($r = .78, p < .001$); (6) Physical Activity ($\alpha = .96$, with item-total correlations ranging from .78 to .94); (7) Social Affiliation ($\alpha = .92$, with item-total correlations ranging from .80 to .90); (8) Hope ($\alpha = .91$, with item-total correlations ranging from .70 to .86); (9) Fun ($\alpha = .94$, with item-total correlations ranging from .77 to .89); and (10) Self-Care ($\alpha = .89$, with item-total correlations ranging from .72 to .80).

Strain. Strain was assessed using the 20-item Symptoms Checklist (Bartone et al., 1989), which describes physical and psychological symptoms of strain. Using a six-

point Likert-type scale (0 = never; 5 = always), respondents were asked to rate the extent to which they had experienced each symptom over the past few weeks. At Time 2, the internal reliability of this scale was $\alpha = .87$, with item-total correlations ranging from .22 to .65.

Burnout. Two of the three burnout components (i.e., emotional exhaustion and cynicism) were assessed using the ten items from the Maslach Burnout Inventory – General Survey (MBI; Maslach et al., 1996). Respondents were asked to rate each item using a seven-point Likert-type scale (0 = never; 6 = every day). Again, the two burnout subscales demonstrated high internal reliability at Time 2: Emotional Exhaustion ($\alpha = .94$, with item-total correlation ranging from .74 to .88) and Cynicism ($\alpha = .93$, item-total correlation ranged from .74 to .87).

Mood. The ten “positive” items from the Positive and Negative Affectivity Scale (Watson et al., 1988) were modified and used to measure positive mood (as opposed to general affectivity). Using a five-point Likert-type scale (1=very slightly or not at all; 5=extremely), respondents were asked to rate the extent to which they experienced a list of emotions within the past few weeks. At Time 2, the internal reliability of this scale was $\alpha = .92$, with item-total correlations ranging from .64 to .80.

Engagement. Engagement was assessed using the 16-item Utrecht Work Engagement Scale-9 (UWES-9; Schaufeli et al., 2006). Respondents were asked to rate each item using a seven-point Likert-type scale (0 = never; 6 = always). Again, the three engagement subscales demonstrated high internal reliability at Time 2: Vigor ($\alpha = .88$, with item-total correlation ranging from .68 to .81); Dedication ($\alpha = .89$, with

item-total correlation ranging from .67 to .86); and Absorption ($\alpha = .76$, with item-total correlation ranging from .48 to .70).

Study 3: Results

Study 3 analyses were conducted with data collected at Time 1 and Time 2 (N=102; ABLE treatment and wait-list groups). Data were screened for outliers, data entry errors, and violations of assumptions, including heterogeneity of variance and non-normality. All variables demonstrated acceptable properties and no cases were deleted. Statistical analyses were performed using SPSS version 17.0 and AMOS 7.0. Missing data were treated with listwise deletion. Sample sizes for each analysis are presented in the associated Table or Figure captions. The descriptive statistics for the Time 1 and 2 study variables (for all of the ABLE participants who completed the survey both times) and correlation coefficients are presented in Table 11.

The ABLE Program and Recovery

To examine the impact of the ABLE program on recovery experiences (Hypothesis 1), I conducted a 2 x 2 repeated measures MANOVA to assess the interaction between ABLE group (treatment versus wait-list control) and time (Time 1 vs Time 2; see Table 12) on recovery experiences. To minimize spurious results, tests for all ten recovery subscales were conducted in one omnibus MANOVA. There was a significant multivariate effect for the Group x Time interaction (Wilks' $\lambda = .76$, $F(10, 89) = 2.80$, $p < .01$, $\eta^2 = .24$). Individual tests indicated significant Group x Time interactions for six of the ten recovery subscales: psychological detachment ($F(1, 98) = 4.50$, $p < .05$, $\eta^2 = .04$); relaxation ($F(1, 98) = 10.02$, $p < .01$, $\eta^2 = .09$); control ($F(1, 98) = 5.41$, $p < .05$, $\eta^2 = .05$); social affiliation ($F(1, 98) = 10.24$, $p < .01$, $\eta^2 = .10$); physical

activity ($F(1, 98) = 10.48, p < .01, \eta^2 = .10$); and hope/optimism ($F(1, 98) = 6.26, p < .05, \eta^2 = .06$). Compared to the control groups, the ABLE treatment group experienced significant increases in these six recovery subscales from Time 1 to Time 2 data collection (see Figures 5 to 10).

I examined the simple effects for these interactions. The pattern of results was the same for psychological detachment, relaxation, and hope. From Time 1 to Time 2, these three recovery experiences significantly increased in the ABLE group (psychological detachment: $F(1,55) = 19.64, p < .001$; relaxation: $F(1,55) = 11.96, p < .01$; hope: $F(1,55) = 5.84, p < .05$), whereas these recovery experiences did not significantly change in the wait-list control group (psychological detachment: $F(1,45) = 1.14, p > .05$; relaxation: $F(1,45) = .83, p > .05$; hope: $F(1,44) = .93, p > .05$). The pattern of results was also the same for control and physical activity. From Time 1 to Time 2, these two recovery experiences did not significantly change in the ABLE treatment group (control: $F(1,55) = .85, p > .05$; physical activity: $F(1,55) = .58, p > .05$), and they significantly decreased in the wait-list control group (control: $F(1,44) = 4.30, p < .05$; physical activity: $F(1,45) = 13.11, p < .01$). Finally, social affiliation increased from Time 1 to Time 2 in the ABLE group ($F(1,55) = 5.61, p < .05$) and decreased in the wait-list control group ($F(1,45) = 6.22, p < .05$)⁹.

⁹ I conducted the same analyses with the higher-order recovery scales. Group x Time interactions for all scales were significant. See Appendix M for a full description of results.

Table 11.

Correlations among Variables at Time 1 & Time 2 (N=102). Scale reliabilities are presented in bold and italics along the diagonal.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Gender ²	----														
2 Age	.84(.37)	----													
3 Job Experience	43.8(9.36)	.09	----												
4 ABLE	9.20(9.45)	-.08	.42 ^c	----											
5 Participation	1.45(.50)	.07	.01	.05	----										
6 Emot. Rec. ¹ (T1)	3.23(.72)	-.05	.00	.16	-.16	.81									
7 Dir. Rec. ¹ (T1)	3.22(.71)	-.05	.05	.04	-.04	.54 ^c	.56								
8 Detachment ¹ (T1)	2.77(.99)	-.11	.07	.10	-.11	.30 ^b	.17	.86							
9 Relaxation (T1)	3.19(.99)	-.16	.13	.16	-.08	.69 ^c	.25 ^b	.49 ^c	.93						
10 Mastery (T1)	2.81(1.06)	-.01	.03	.03	.10	.35 ^c	.58 ^c	.19	.24 ^a	.88					
11 Control (T1)	3.41(.89)	.06	.19	.07	-.10	.42 ^c	.62 ^c	.21 ^a	.30 ^b	.16	.79				
12 Planning (T1)	3.43(1.13)	.01	.01	.03	-.04	.34 ^b	.73 ^c	.04	.03	.11	.48 ^c	.81 ^d			
13 Physical (T1)	3.24(1.20)	-.16	-.06	-.01	.11	.33 ^b	.70 ^c	.04	.13	.28 ^b	.11	.34	.94		
14 Social (T1)	3.68(.84)	.13	.09	.11	.10	.77 ^c	.47 ^c	.16	.43 ^c	.25 ^a	.37 ^c	.39 ^c	.27 ^b	.82	
15 Fun (T1)	3.36(.97)	-.08	-.03	.15	.26 ^b	.84 ^c	.48 ^c	.20 ^a	.47 ^c	.40 ^c	.31 ^b	.22 ^a	.35 ^c	.61 ^c	.91
16 Hope (T1)	3.32(.88)	-.03	-.25 ^a	-.04	.21 ^a	.65 ^c	.41 ^c	.09	.18	.16	.22 ^a	.38 ^c	.31 ^b	.37 ^c	.53 ^c
17															.76

Continued on next page.

Work & Recovery 102

	Variable	M(SD)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
16	Self-reward (T1)	2.50(1.06)	.03	.03	.22 ^a	.16	.83	.46 ^c	.18	.50 ^c	.32 ^b	.38 ^c	.30 ^b	.23 ^c	.56 ^c	.58 ^c	.44 ^c	.85						
17	Emo. Rec. ¹ (T2)	3.38(.83)	.07	.01	.07	.38 ^c	.60 ^c	.34 ^b	.23 ^a	.46 ^c	.18	.23 ^a	.15	.33 ^b	.44 ^c	.53 ^c	.38 ^c	.47 ^c	.87					
18	Dir. Rec. ¹ (T2)	3.17(.77)	.07	.01	.10	.36 ^c	.34 ^c	.42 ^c	.16	.21 ^a	.19	.21 ^a	.26 ^c	.44 ^c	.24 ^a	.35 ^c	.27 ^b	.28 ^b	.67 ^c	.67				
19	Detachment ¹ (T2)	3.13(1.04)	.25 ^c	.01	.23 ^a	.09	.19	.10	.60 ^c	.39 ^c	.07	.16	.05	.00	.05	.10	-.03	.17	.34 ^c	.31 ^b	.90			
20	Relaxation (T2)	3.36(1.04)	.20	.01	.14	.18	.45 ^c	.18	.33 ^b	.58 ^c	.13	.16	.00	.19	.28 ^b	.35 ^c	.07	.36 ^c	.72 ^c	.47 ^c	.51 ^c	.94		
21	Mastery (T2)	2.84(1.02)	.09	.06	.03	.31 ^b	.28 ^b	.38 ^c	.09	.17	.39 ^c	.09	.15	.34 ^c	.22 ^a	.32 ^b	.18	.20 ^a	.52 ^c	.74 ^c	.22 ^a	.34 ^c	.92	
22	Control (T2)	3.33(.96)	.12	.03	.09	.14	.29 ^b	.22 ^a	.33 ^b	.36 ^c	-.04	.42 ^c	.13	.12	.23 ^a	.25 ^a	.10	.17	.55 ^c	.65 ^c	.40 ^c	.60 ^c	.37 ^c	.90
23	Planning (T2)	3.46(1.02)	.11	.06	.01	.19	.22 ^a	.28 ^b	.08	.07	.02	.17	.36 ^c	.17	.17	.15	.27 ^b	.23 ^a	.37 ^c	.72 ^c	.22 ^a	.21 ^a	.33 ^b	.43 ^c
24	Physical (T2)	3.04(1.32)	.10	.01	.14	.37 ^c	.20 ^a	.33 ^b	.00	.04	.14	-.01	.12	.54 ^c	.10	.26 ^b	.20 ^a	.19	.49 ^c	.73 ^c	.09	.24 ^a	.42 ^c	.18
25	Social (T2)	3.69(.98)	.02	.01	.11	.40 ^c	.55 ^c	.27 ^b	.14	.38 ^c	.07	.16	.20 ^a	.26 ^a	.48 ^c	.48 ^c	.41 ^c	.40 ^c	.82 ^c	.58 ^c	.18	.54 ^c	.44 ^c	.47 ^c

Continued on next page.

Work & Recovery 103

Variable	M(SD)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
26 Fun (T2)	3.42(1.01)	-.11	-.06	.08	.33 ^b	.53 ^c	.34 ^c	.16	.31 ^b	.19	.24 ^a	.17	.31 ^b	.42 ^c	.58 ^c	.34 ^b	.36 ^c	.87 ^c	.57 ^c	.26 ^b	.47 ^c	.47 ^c	.37 ^c
27 Hope (T2)	3.52(1.02)	.02	-.10	-.02	.39 ^c	.43 ^c	.27 ^b	.10	.21 ^a	.15	.08	.14	.31 ^b	.23 ^a	.41 ^c	.48 ^c	.33 ^b	.78 ^c	.50 ^c	.11	.33 ^b	.35 ^c	.22 ^a
28 Self-reward (T2)	2.91(1.10)	-.01	.05	-.04	.28 ^b	.47 ^c	.31 ^b	.19	.37 ^c	.17	.28 ^b	.10	.28 ^b	.39 ^c	.34 ^b	.24 ^a	.43 ^c	.85 ^c	.61 ^c	.30 ^b	.57 ^c	.49 ^c	.54 ^c
29 Strain (T2)	1.72(.48)	.26 ^b	.07	.01	.37 ^c	.27 ^b	-.10	-.12	.25 ^a	.03	-.13	-.09	-.08	.23 ^a	.23 ^a	-.10	.23 ^a	.43 ^c	.34 ^b	.32 ^b	.43 ^c	-.14	.33 ^b
30 Emo. Exh. (T2)	3.55(1.66)	.23 ^a	-.03	.12	-.14	-.10	.24 ^a	-.19	-.16	-.12	-.20	-.14	-.18	-.08	-.07	-.05	.01	.29 ^b	.32 ^b	.34 ^c	.41 ^c	.23 ^a	.36 ^c
31 Cynicism (T2)	2.79(1.66)	.09	-.14	.10	.35 ^c	.21 ^a	.20 ^a	-.13	-.17	-.05	.27 ^b	-.09	-.14	-.16	.24 ^b	-.13	-.10	.38 ^c	.40 ^c	.27 ^b	.35 ^c	.26 ^b	.49 ^c
32 Vigor (T2)	3.04(1.09)	-.11	.10	-.13	.34 ^c	.25 ^a	.31 ^b	-.03	.18	.16	.23 ^a	.19	.23 ^a	.29 ^b	.25 ^b	.07	.16	.40 ^c	.36 ^c	.07	.33 ^b	.34 ^c	.29 ^b
33 Dedication (T2)	3.66(1.07)	-.14	.04	-.06	.41 ^c	.21 ^a	.34 ^b	-.06	.08	.16	.31 ^b	.30 ^b	.13	.20 ^a	.20 ^a	.14	.18	.31 ^b	.28 ^b	.09	.15	.28 ^b	.24 ^b
34 Absorption (T2)	3.71(1.00)	.09	.01	.32 ^b	.20	.10	.27 ^b	-.16	.06	.13	.26 ^b	.23 ^a	.12	.14	.09	.02	.08	.20 ^a	.16	-.10	.08	.11	.17
35 Pos. Mood (T2)	2.97(.81)	-.05	.01	-.08	.45 ^c	.41 ^c	.25 ^a	.14	.26 ^b	.21 ^a	.24 ^a	.11	.13	.37 ^c	.36 ^a	.25 ^a	.30 ^b	.57 ^c	.33 ^b	.26 ^b	.38 ^c	.27 ^b	.31 ^b

Continued on next page.

Variable	23	24	25	26	27	28	29	30	31	32	33	34	35
23 Planning (T2)	.78 ¹												
24 Physical (T2)	.33 ^b	.96											
25 Social (T2)	.39 ^c	.36 ^c	.92										
26 Fun (T2)	.28 ^b	.47 ^c	.65 ^c	.94									
27 Hope (T2)	.32 ^b	.49 ^c	.54 ^c	.73 ^c	.91								
28 Self-reward (T2)	.31 ^b	.42 ^c	.60 ^c	.67 ^c	.58 ^c	.89							
29 Strain (T2)	-.19	-.29 ^b	-.37 ^c	-.40 ^c	-.25 ^b	-.29 ^b	.87						
30 Emo. Exh. (T2)	-.09	-.24 ^a	-.19	-.26 ^b	-.20 ^a	-.14	.48 ^c	.89					
31 Cynicism (T2)	-.18	-.24 ^a	-.25 ^a	-.36 ^c	-.29 ^b	-.27 ^b	.43 ^c	.65 ^c	.86				
32 Vigor (T2)	.08	.29 ^b	.32 ^b	.40 ^c	.28 ^b	.30 ^b	-.45 ^c	-.61 ^c	-.69 ^c	.88			
33 Dedication (T2)	.11	.18	.25 ^a	.35 ^c	.27 ^b	.23 ^a	-.38 ^c	-.50 ^c	-.65 ^c	.82 ^c	.87		
34 Absorption (T2)	.05	.13	.16	.22 ^a	.20 ^a	.14	-.26 ^b	-.30 ^b	-.41 ^c	.63 ^c	.65 ^c	.77	
35 Pos. Mood (T2)	.01	.31 ^b	.42 ^c	.51 ^c	.43 ^c	.57 ^c	-.45 ^c	-.33 ^b	-.43 ^c	.54 ^c	.57 ^c	.36 ^c	.89

¹ Higher order recovery scales.

² Note: Gender: 0=male, 1=female

³ Note: A correlation coefficient is presented for "planning" as it only includes two items.

^a $p < .05$, ^b $p < .01$, ^c $p < .001$

Table 12.

Summary of Recovery Experience Means and Standard Errors for the ABLE Treatment Participants and the Wait-List Control Group at Time 1 and Time 2 (N=102).

	ABLE treatment group				Wait-list control group			
	Time 1		Time 2		Time 1		Time 2	
	M	SE	M	SE	M	SE	M	SE
Psych. Detachment	2.67	.13	3.21	.14	2.90	.15	3.01	.16
Relaxation	3.12	.13	3.52	.14	3.32	.15	3.15	.16
Mastery	2.91	.14	3.12	.13	2.71	.16	2.49	.15
Control	3.32	.12	3.45	.13	3.54	.13	3.20	.15
Planning	3.39	.15	3.63	.13	3.51	.17	3.30	.15
Social Affiliation	3.76	.11	4.04	.12	3.59	.13	3.30	.14
Physical Activity	3.36	.16	3.48	.16	3.11	.18	2.49	.18
Hope/Optimism	3.49	.12	3.77	.13	3.14	.13	2.95	.14
Fun/Humour	3.69	.13	3.82	.13	3.18	.14	3.13	.15
Self-reward	2.65	.14	3.18	.14	2.34	.16	2.55	.16

Please note: M = Mean; SE = Standard Error

^a $p < .05$; ^b $p < .01$; ^c $p < .001$

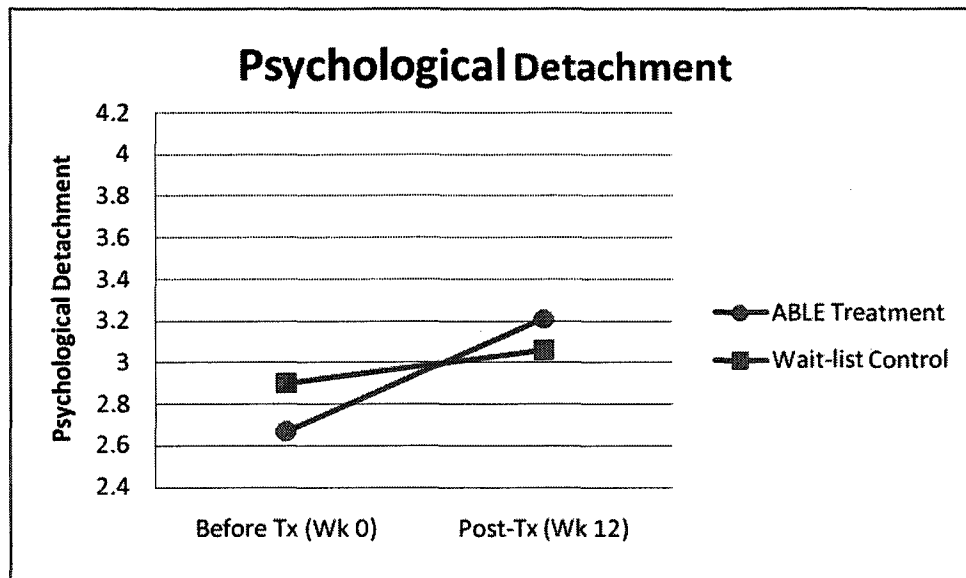


Figure 5. Perceived psychological detachment before and after the ABLÉ treatment program for the treatment group and the wait-list control group.

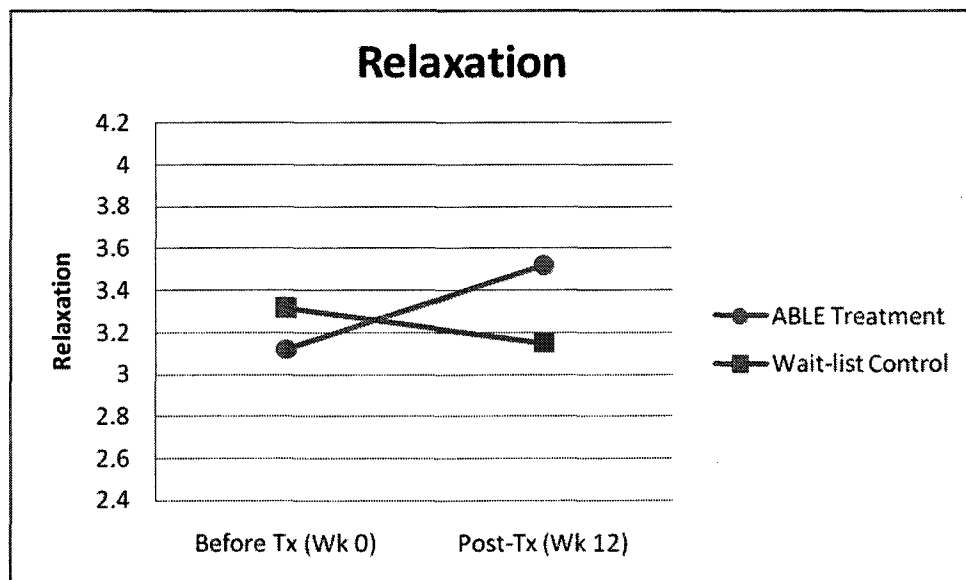


Figure 6. Perceived relaxation before and after the ABLÉ treatment program for the treatment group and the wait-list control group.

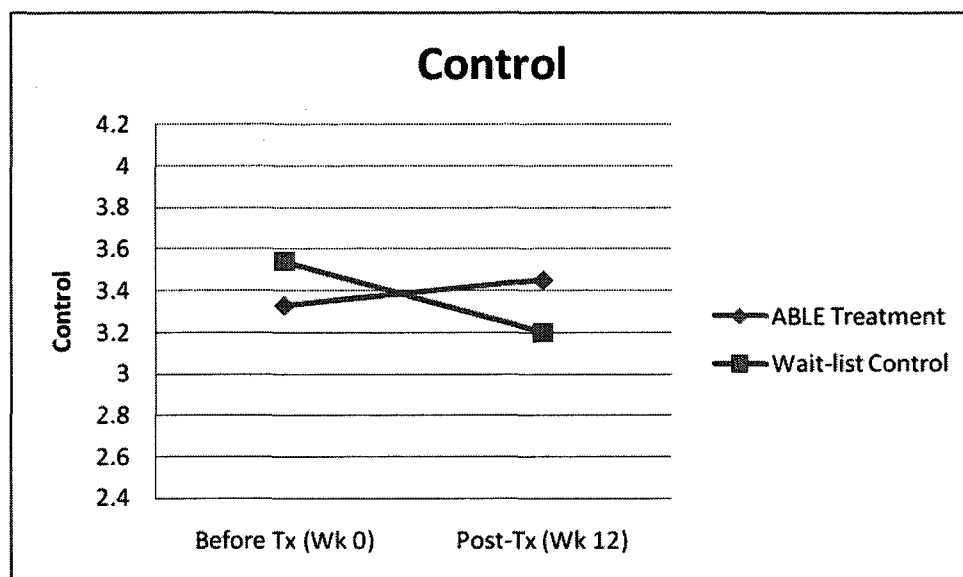


Figure 7. Perceived control before and after the ABLT treatment program for the treatment group and the wait-list control group.

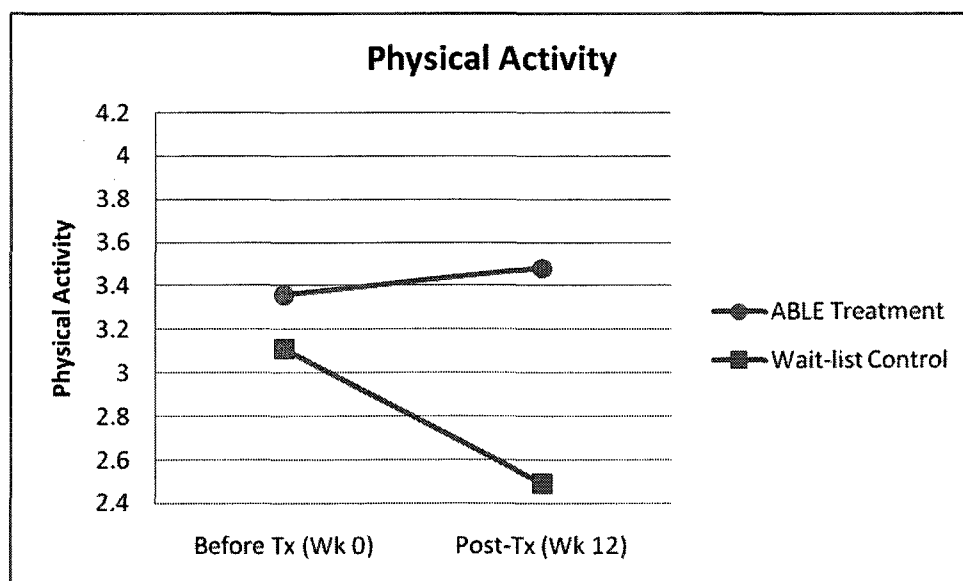


Figure 8. Perceived physical activity before and after the ABLT treatment program for the treatment group and the wait-list control group.

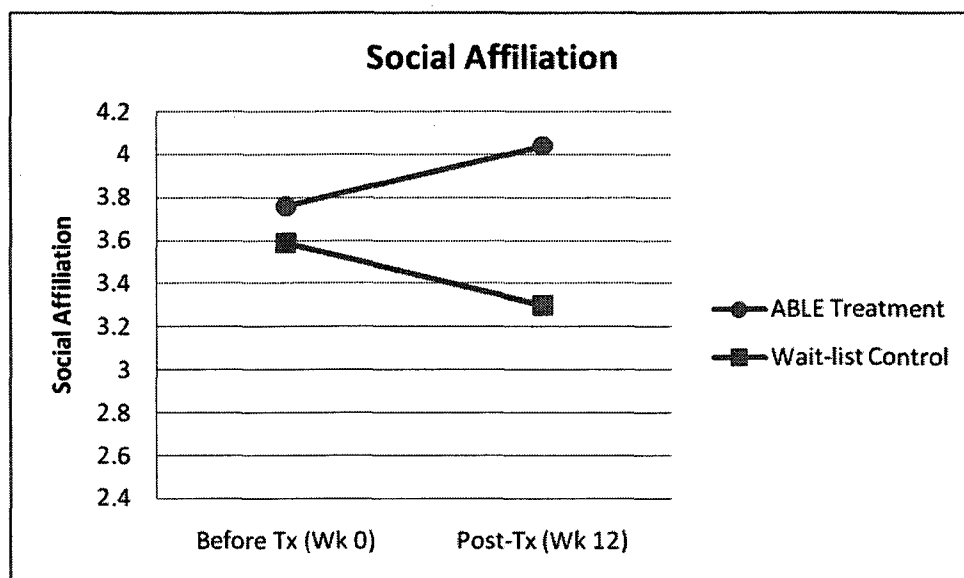


Figure 9. Perceived social affiliation before and after the ABLÉ treatment program for the treatment group and the wait-list control group.

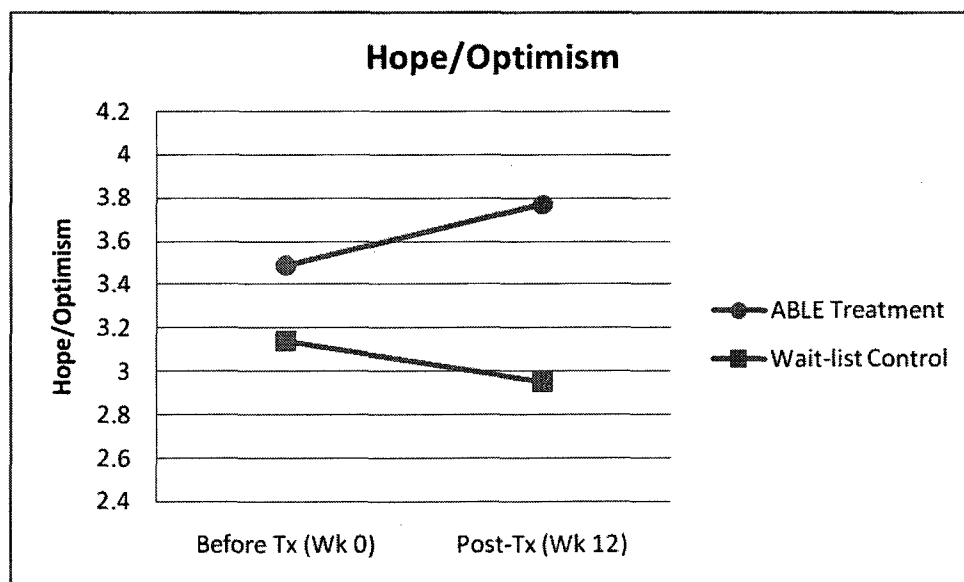


Figure 10. Perceived hope/optimism before and after the ABLÉ treatment program for the treatment group and the wait-list control group.

The Mediating Role of Recovery

I conducted a series of MANOVAs to examine the mediating effect of recovery on the relationship between ABLE program participation and strain and motivational outcomes (Hypothesis 2). Following the procedures recommended by Baron and Kenny (1986) I examined: (1) the impact of the ABLE intervention on the outcomes (see Table 13); (2) the impact of the ABLE program on recovery (Hypothesis 1; Table 12; and (3) whether the impact of the ABLE program on the outcomes remained after controlling for the impact of the ABLE program on recovery (see Table 14).

First, I conducted a 2 x 2 between within MANOVA to assess the interaction between ABLE group (treatment versus wait-list control) and time (Time 1 vs Time 2; see Table 13) on strain and motivational outcomes. To minimize spurious results, tests for all eight outcomes were conducted in one omnibus MANOVA. This analysis revealed a significant multivariate effect for the Group x Time interaction (Wilks' $\lambda=.86$, $F(7, 91)= 2.16$, $p<.05$, $\eta^2=.14$). Individual tests revealed significant Group x Time interactions for only one outcome: strain ($F(1, 98)= 8.75$, $p<.01$, $\eta^2=.08$). The control group experienced increased strain from Time 1 to Time 2 ($F(1,45)=39.24$, $p<.001$), whereas the ABLE treatment group did not experience any increased strain ($F(1,55)=2.4$, $p>.05$; see Figure 12).

The second MANOVA critical to this analysis was the 2 x 2 between within MANOVA to assess the interaction between ABLE group (treatment versus wait-list control) and time (Time 1 vs Time 2) on recovery outcomes. This analysis was reported previously and revealed significant Group x Time interactions for six recovery

experiences: psychological detachment, relaxation, control, physical activity, social affiliation and hope (see Table 12 and Figures 4-9).

Table 13.

Summary of Strain and Motivation Means and Standard Errors for the ABLE Treatment Participants and the Wait-List Control Group at Time 1 and Time 2 (N=102).

	ABLE treatment group				Wait-list control group			
	Time 1		Time 2		Time 1		Time 2	
	M	SE	M	SE	M	SE	M	SE
Strain	1.44	.10	1.55	.06	1.45	.10	1.92	.06
Emotional Exhaustion	3.94	.21	3.36	.23	4.08	.23	3.81	.25
Cynicism	2.73	.21	2.26	.22	3.52	.22	3.42	.23
Vigor	3.24	.16	3.37	.14	2.56	.17	2.64	.15
Dedication	4.02	.15	4.04	.13	3.28	.17	3.18	.14
Absorption	3.96	.16	3.87	.14	3.44	.17	3.50	.15
Positive Mood	3.16	.10	3.31	.10	2.68	.10	2.58	.11

Please note: M = Mean; SE = Standard Error

^a $p < .05$; ^b $p < .01$; ^c $p < .001$

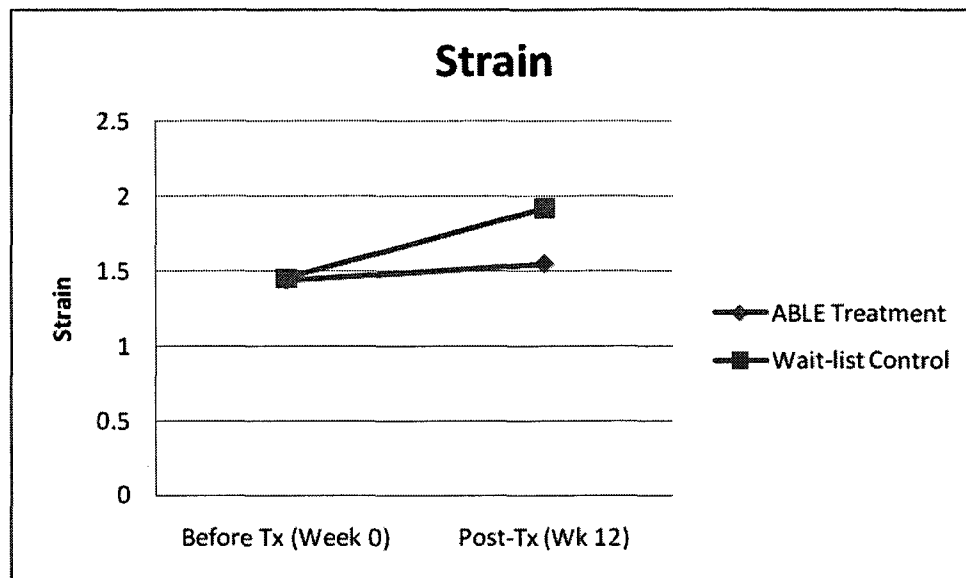


Figure 11. Perceived strain before and after the ABLT treatment program for the treatment group and the wait-list control group.

Therefore, I conducted a third 2 x 2 between within MANOVA to assess the interaction between ABLT group (treatment versus wait-list control) and time (Time 1 vs Time 3) on the significant recovery and strain outcomes¹⁰. This analysis revealed a significant multivariate effect for the Group x Time interaction (Wilks' $\lambda=.78$, $F(7, 93)=3.74$, $p<.01$, $\eta^2=.14$). To investigate the individual impact of the Group x Time interaction on the individual recovery and strain outcomes, a Roy-Bargmann's stepdown analysis was performed to establish whether the Group x Time interaction would continue to have an effect on strain after controlling for the recovery subscales (see Table 14). For this analysis, outcomes were entered in order of priority, such that

¹⁰ Only those outcomes that were significantly predicted by the Group*Time interaction were used in this analysis as per Baron & Kenny's (1986) recommended mediation procedures. However, I also conducted a MANOVA with all of the recovery scales and strain and motivation outcomes and the pattern of results was the same.

higher priority variables were entered first. The outcome given the highest priority (i.e., psychological detachment) was analyzed with an ANOVA and the following outcomes were analyzed with an ANCOVA, where all outcomes given higher priority acted as covariates. In this analysis the recovery subscales were entered before the strain outcome enabling the isolation of the effect of the Group x Time interaction on strain, after controlling for the effects of the interaction on recovery subscales. Individual stepdown analyses revealed significant Group x Time interactions for: psychological detachment ($F(1, 99) = 4.93, p < .05, \eta^2 = .05$), relaxation ($F(1, 98) = 6.07, p < .05, \eta^2 = .06$), physical activity ($F(1, 96) = 4.17, p < .05, \eta^2 = .04$) and strain ($F(1, 93) = 4.07, p < .05, \eta^2 = .04$; see Table 23). After controlling for the recovery subscales, there was still a significant Group x Time interaction for strain; however, the effect size was reduced (i.e., $\eta^2 = .08$ to $\eta^2 = .04$). Therefore, these results suggest that recovery subscales partially mediated the effect of the ABLE program on strain¹¹.

¹¹ The same analyses were reported with the three higher-order recovery scales with similar results. After controlling for the higher-order recovery subscales through the Roy-Bargmann Stepdown analysis, the Group x Time interaction for strain was just significant ($p = .05$), and the effect size was reduced (i.e., $\eta^2 = .08$ to $\eta^2 = .04$). See Appendix N for a full description of the results.

Table 14.

Summary of Roy-Bargmann's Stepdown Analysis Results Evaluating the Effect of the Group by Time Interaction on Recovery and Strain Outcomes. (N=101)

	Roy Bargmann's Step Down Analysis (F ratio)	Partial Eta Squared
Detachment	$F(1,99) = 4.93^a$	$\eta^2=.05$
Relaxation	$F(1,98) = 6.07^a$	$\eta^2=.06$
Control	$F(1,97) = 1.17$	$\eta^2=.01$
Physical Activity	$F(1,96) = 4.17^a$	$\eta^2=.04$
Social Affiliation	$F(1,95) = 3.71$	$\eta^2=.04$
Hope/Optimism	$F(1,94) = .35$	$\eta^2=.00$
Strain	$F(1,93) = 4.07^a$	$\eta^2=.04$

^a $p < .05$; ^b $p < .01$; ^c $p < .001$

Study 3: Discussion

Given the research demonstrating the importance of recovery to employee health and well-being (e.g., Kühnel, et al., 2009; Siltaloppi et al., 2009; Sonnentag & Fritz, 2007; Sonnentag et al., 2008; Sonnentag et al., 2010), it is helpful to understand how we can influence recovery experiences. To date, there has been a paucity of research examining whether recovery experiences can be increased. The objective of Study 3 was to use longitudinal data to assess the influence of a work-life balance intervention on recovery experiences, and to examine whether recovery experiences mediate the impact of the work-life balance intervention on strain and motivational outcomes.

The ABLE Program and Recovery

The first goal of this study was to examining the impact of the ABLE program on recovery experiences (Hypothesis 1). Participants who took part in the ABLE treatment program engaged in significantly more psychological detachment, relaxation, control, social affiliation, physical activity, and hope/optimism, when compared to a wait-list control group. The pattern of results was the same for psychological detachment, relaxation, and hope/optimism: Participants in the ABLE program reported more psychological detachment, relaxation, and hope/optimism from Time 1 to Time 2, whereas participants in the wait-list control group reported no significant change in these experiences. The pattern of results was the same for control and physical activity: Participants in the wait-list control group reported significantly less control and physical activity from Time 1 to Time 2, whereas participants in the ABLE program reported no significant change in these experiences. Finally, participants in the ABLE program reported more social affiliation from Time 1 to Time 2, whereas participants in the wait-list control group reported less social affiliation across the same time period.

The decrease of several recovery experiences in the wait-list control group from Time 1 to Time 2 warrants further discussion. There could be several explanations for this pattern of results. First, the wait-list control group could simply be experiencing more difficulty balancing work and life, and the decrease in recovery represents a natural decline. Second, Time 1 data was collected in September and Time 2 data was collected in December. Although September is often a busy time for people, with the return to work and school, December tends to be an extremely busy, and often

stressful, time for people as they prepare for the holidays. Therefore, it is possible that those participants not in the ABLE program were experiencing increased time demands and/or elevated levels of stress when they completed the survey in December.

Regardless of the reason for the decrease in recovery experiences in the wait-list control group, the findings reinforce the positive impact of the ABLE program because the ABLE participants increased or maintained their engagement in many recovery activities over the same time period. Taken together, these results provide support for Hypothesis 1 and demonstrate that work-life balance programs, such as the ABLE program, can have a positive influence on recovery experiences.

The Mediating Role of Recovery

According to the transactional stress model, long-term strain outcomes can be mitigated with the availability of appropriate resources (Lazarus & Folkman, 1984). To the extent that recovery experiences work as a resource and provide recuperative effects, these experiences may prevent long-term stress and strain outcomes. Therefore, the final question that this research was designed to address is whether any decreased strain outcomes associated with the ABLE program were due, in part, to the increased recovery experiences (Hypothesis 2). Results from a series of MANOVAs suggested that recovery experiences may be partially responsible for the effects of the ABLE program on strain. Although there was some evidence to suggest the ABLE program continued to have a direct effect on employee strain, that effect was greatly reduced after controlling for the program's effects on recovery.

It should be acknowledged that, although there is clear theoretical rationale for recovery to be the precursor to increased well-being and decreased strain, it is possible

that the reverse is true (i.e., decreased strain leads to recovery) or there is a reciprocal effect. The analyses conducted in this study were not able to determine definitively the nature of this relationship. It remains for future research to examine further the directionality of this effect.

Limitations & Future Research

There are several limitations of the present study that should be addressed. First, it was not possible to assign participants randomly to the wait-list and control groups. At Time 1, however, participants in the treatment group and the wait-list control group did not significantly differ on basic demographics, such as gender, age, education, tenure, hours worked per week. There were no significant differences between these two groups on all of the recovery experiences, except for fun/humour and hope/optimism: The wait-list control group experienced slightly less hope/optimism and fun/humour. Furthermore, the analysis conducted took into account both group (intervention and control) and time (pre-intervention and post-intervention), therefore any differences in the groups at Time 1 would have been accounted for in the analyses. However, future research should examine the influence of interventions on recovery experiences when using a randomized design.

Second, although these results provide convincing evidence that recovery experiences can be influenced by an intervention, it is also important to know whether these effects will be maintained over time. The vacation literature suggests that the benefits of vacation tend to dissipate by one to four weeks (de Bloom et al., 2010; Westman & Eden, 1997; Westman & Etzion, 2001). Because this type of program helped employees change behaviour to incorporate more recovery activities on a

regular basis, it is possible that these changes may be more long lasting. If this type of program could increase recovery experiences over a longer period of time, the impact on employee health and well-being would be substantial. Accordingly, future research should assess the extent to which these recovery-related behavioural changes could be maintained over time with and without ongoing coaching support.

Third, this study did not allow for examination of the specific mechanisms of the intervention that are important for increasing recovery. For example, we do not know if it was the information on recovery experiences, the one-on-one personal coaching, or the combination of both, that is more important for helping people incorporate recovery experiences into their daily routine. To assess the underlying mechanisms of the ABLE program and the timing of effects, it would have been beneficial to have more frequent data points throughout the program. Furthermore, other types of intervention strategies, should be examined. For instance, organizational policies designed to promote work-life balance may have an impact on the extent to which employees engage in recovery experiences.

Conclusion

This study extends past research on recovery experiences in two important ways. First, there is very little research whether recovery experiences can be increased. Given the literature suggesting that recovery activities are associated with many positive personal and professional outcomes (e.g., Kühnel, et al., 2009; Siltaloppi et al., 2009; Sonnentag & Fritz, 2007; Sonnentag et al., 2008; Sonnentag et al., 2010) and the research suggesting Canadians are spending less time on social and leisure activities (Canadian Index of Well-being, 2010), it is important to explore avenues for promoting

and maintaining engagement in recovery experiences. This study demonstrated that participation in a 12-week work-life balance intervention was associated with increases in several recovery experiences, when compared to a wait-list control group.

Second, this study demonstrated that recovery experiences are a mechanism through which a work-life balance intervention can partially impact participant strain outcomes. This finding is in line with recovery theory posits that recovery works in opposition of the strain process and acts to help individuals restore and accumulate resources (e.g., Meijman & Mulder, 1998; Sonnentag, 2001; Sonnentag & Bayer, 2005; Sonnetag & Fritz, 2007).

General Discussion

Given the high prevalence of work-life conflict and occupational stress and their deleterious effects on employees and organizations (e.g., Allen et al., 2000; Duxbury et al., 1992; Duxbury & Higgins, 2003; Frone, 2003; Goetzel et al., 1998; Kristensen, 1996), understanding how we can enhance work-life balance and minimize the impact of work stress is paramount. Traditionally, stress management efforts have focused on secondary or tertiary interventions (e.g., employee assistance programs, stress management program; Cartwright & Cooper, 2005); however, a focus on more frequent recovery experiences (e.g., daily or weekly) may offer a more proactive approach to mitigating the negative impact of work stress. Accordingly, it is important to develop and explore the construct of recovery. Therefore, the goals of this program of research were to: (1) explore and potentially expand the domain of recovery experiences; (2) examine the relationship between recovery experiences and related constructs (i.e., coping, strain, burnout, engagement, positive mood); (3) examine the

influence of a work-life balance intervention on recovery experiences; and (4) assess whether recovery experiences mediate the impact of the work-life balance intervention on strain and motivational outcomes.

Summary of Studies 1, 2, and 3

This dissertation consisted of three studies: In Study 1, a five-step qualitative scale development process that involved extensive consultation with subject matter experts was conducted. In this study, six new subscales were proposed and new items were created to add to the existing REQ (Sonnentag & Fritz, 2007). This study provided qualitative evidence for the content validity of the new REQ-Expanded. Consistent with Thayer and colleagues's (1993; 1994) mood regulation theory several of the new recovery experiences that emerged were "high energy" experiences (e.g., physical activity, fun/humour, social affiliation). Therefore, these new experiences may not just decrease tension, but also increase energy.

In Study 2, employees from a wide variety of occupations completed a work stress survey which included measures of job stressors, recovery experiences, coping strategies, and strain and motivational outcomes (Time 1: September 2009). This study provided evidence of construct validity for the REQ-Expanded. The REQ-Expanded factored into the hypothesized ten subscales (i.e., the four existing recovery subscales and six additional subscales). This scale also showed the presence of three higher-order recovery scales. The six new recovery subscales jointly accounted for additional variance in strain and motivational outcomes, even after controlling for the four existing recovery subscales. Specifically, physical activity and fun or humorous experiences tended to be uniquely related to these outcomes. Furthermore, the REQ-

Expanded was distinct from the construct of coping, and it demonstrated incremental validity in predicting several outcomes. Finally, consistent with job-demands resources theory (e.g., Bakker & Demerouti, 2007), recovery experiences were related to positive mood more so than strain and burnout outcomes.

Study 3 incorporated data from Study 2 (Time 1: September, 2009) and data from these same subjects after the ABLE program intervention (Time 2: December, 2009) to examine whether recovery experiences could be influenced by this intervention. Indeed, this study did provide evidence to suggest that recovery experiences can be influenced by an intervention program. Specifically, compared to a wait-list control group, participants in the intervention program experienced significant increases in six of the ten recovery experiences. This study makes a valuable contribution to the literature because no other study to date has examined the effect of an intervention program on recovery experiences. Study 3 also demonstrated that recovery experiences tend to partially mediate the impact of the ABLE program on employee strain.

Limitations and Future Research

I have outlined several specific limitations of this program of research and recommendations for future research in the previous study discussion sections. There are some limitations that are relevant across more than one study or are pertinent to the entire program of research. First, cross-sectional and self-report data were used in Study 2. Therefore, there is a concern that common method bias may have inflated the results because of measurement context effects and self-report bias (e.g., Podsakoff et al., 2003). Despite this limitation, several characteristics of the data lessen this concern.

Non-significant correlations between several variables were observed in the Study 2 dataset. Furthermore, examination of Time 1 and Time 2 correlations presented in Study 3 suggests that many significant relationships continue to exist over time.

Second, both Study 2 and Study 3 were conducted with convenience samples. Furthermore, the lack of true random assignment of ABLE intervention participants calls into question the generalizability of the findings. However, both of the samples were diverse in terms of their demographic characteristics (e.g., gender and age) as well as their work history and experience (e.g., tenure, industry, occupation). Accordingly, the samples appeared to capture a wide spectrum of the population. Future research should aim to use random selection of participants and random assignment of participants to intervention and control groups.

Third, although Study 3 did involve longitudinal data, it would have been beneficial to have additional data collection points, both throughout the intervention program and after the program ended. More frequent data points throughout the program would have enabled an assessment of the underlying mechanisms of the intervention that increase recovery experiences and the timing of effects. Future research may consider using several data collection phases to examine the extent to which recovery-related behavioural changes can be maintained over time without coaching support.

Fourth, this series of studies assessed recovery experiences over a longer period of time (i.e., in the past several weeks) than has been traditionally used in the recovery literature. Most recovery research to date has focused on day-level experiences and outcomes (e.g., Binnewies, Sonnentag, & Mojza, 2009a; Fritz & Sonnentag, 2009;

Sonnentag et al., 2008; Sonnentag & Jelden, 2009) or week-level experiences and outcomes (Binnewies, Sonnentag & Mojza, 2009b; Sonnentag Mojza, Binnewies, & Scholl, 2008). It is possible that these results differ due to the difference in time-frame. Therefore, these findings should be confirmed with day-level data. However, recovery experiences over several weeks are related to strain and motivational outcomes and the pattern of relationships seemed to be somewhat consistent with past recovery research (e.g., Sonnentag & Fritz, 2007).

Fifth, both a ten-factor and the three higher-order factor structures remain to be confirmed in other samples. Therefore, future research is required to examine the stability of the REQ-Expanded factor structure. If the ten-factor and the higher-order factor structure is confirmed, future research should use theory to guide the use of the more specific factors or the more broad, higher-order factors. Indeed, Sonnentag and Frese (2003) noted that investigators should devote more attention to the level of specificity of the stressors, resources, and strain when designing their research.

Sixth, although Sonnentag and Fritz (Fritz and Sonnentag, 2005; Sonnentag & Fritz, 2007) suggested that the most useful recovery experiences may be relative to the specific demands of one's job and individual preferences, these factors were not included in this study. Given the expanded domain of recovery experiences, it is especially important to understand when and for whom each of these experiences may be the most useful.

In terms of specific job demands, Sonnentag and Fritz (2007) stated that recovery occurs when "...the functional systems taxed during work will not be called upon any longer" (p. 205). Accordingly, the type of stressor experienced on the job

should have some impact on the type of recovery process that is most effective. For example, an individual who experiences high workload, which requires constant mental activation, would probably benefit from low activation relaxation activities as opposed to mastery activities that may require further mental activation. Accordingly, to the extent that jobs and industry types can be associated with “typical stressors,” it may be possible to determine the preferred recovery methods across professions. Indeed, Sonnentag and Jelden (2009) found that individuals who experienced high job stressors were less likely to spend non-work time engaging sports and more time engaging in more low-effort activities. Considering all ten facets of recovery concurrently would allow for a comparative evaluation of the efficacy of each recovery experiences for specific occupations and for specific job demands. Future research should explore this possibility.

In terms of individual preferences, several personal values or characteristics may influence the preference for and possibly the efficacy of recovery activities. Just as people can perceive different events as stressful, people can also perceive different events as stress-relieving. The extent to which one may find an activity enjoyable and stress-relieving may be dependent on the personality and values of individuals. For example, if one values physical fitness engaging in activities to promote health should be valued and promote psychological well-being; whereas if one values social affiliation, engaging in positive social interactions should be valued and promote psychological well-being. This area of future research is in line with recent research by Cohen (2009) who individual values, can influence perceptions of work-family conflict and the use of coping strategies.

Considering that both job demands and individual preferences may affect the preference for and the efficacy of recovery experiences, it is possible that there may be situations in which individuals may have a preference for a recovery activity that may not be optimal given one's job demands. That is, if individuals choose professions based on their interests, they may also enjoy recovery-related experiences that are similar to job experiences (e.g., a job requires social interaction and there is also a preference for social activities). Future research should explore how individual interests and job demands contribute to the efficacy of recovery activities for reducing strain and enhancing well-being.

Seventh, another avenue for future research is examining the cross-cultural differences in recovery experiences. Indeed, Burke (2010) recently noted the importance of conducting more cross-cultural studies in the domain of occupational stress and coping. Most of the research on recovery experiences has been conducted in Germany and other European countries. To date, there is very little published work on recovery conducted with North American samples. Although measures created in other parts of the world often have similar psychometric properties in other cultures (e.g., Spector et al., 2004), relationships among variables may differ. For example, Bhagat, Krishnan, Nelson, Leonard, Ford, and Billing (2010) found that different coping strategies tend to be more effective in different cultures. Problem-focused coping tended to be better at moderating the relationship between job stress and psychological strain in individualistic cultures, whereas emotion-focused coping tended to be better at moderating this relationship in collectivistic cultures (Bhagat et al., 2010). Therefore,

recovery experiences may also function differently across individualistic and collectivistic cultures.

Finally, it should be noted that although several different theories contribute to the understanding of recovery experiences and their effect on employee well-being (e.g., broaden-and-build theory, Fredrickson, 2006; conservation of resources theory, Hobfoll, 1998; effort-reward recovery theory, Meijman & Mulder, 1998; ego depletion theory, Baumesiter, 2001; job-demands resources theory, Bakker & Demerouti, 2007 and mood regulation theory, Parkinson & Totterdell, 1999, Thayer, et al., 1994), there is not one comprehensive recovery theory. Future research should aim to test the specific mechanisms of existing theories and integrate these theories to create a specific recovery theory.

In this study, consistent with many of the theories noted above, engagement in recovery experiences was associated with positive mood, work engagement, and reduced strain. Theoretically, the relationship between recovery experiences and these positive outcomes is due to the experience of positive emotions and the restoration of personal resources, however, this link remains to be formally tested. Future research should examine the mediating effect of rest and positive emotions on the relationship between recovery experiences and employee well-being.

Furthermore, consistent with job-demands resources theory (e.g., Bakker & Demerouti, 2007), recovery experiences were related to positive mood (a "motivational" outcome) more so than strain and burnout outcomes. However, recovery experiences were not related to engagement to a greater extent than strain and burnout outcomes. Therefore, future research should examine the extent to which

recovery experiences act according to the dual-process theory of the job-demands resources model.

Practical Implications

From the standpoint of employees, the results of this study suggest that engaging in daily recovery experiences may result in better physical health, improved mood, and more feelings of engagement at work. A Canadian survey of the work-life conflict Duxbury and Higgins (2003) found that at least 40% of people believed that time spent on non-work activities (e.g., children, spouse, leisure, volunteer projects) negatively affected their work performance, whereas less than 12% believed these activities were of benefit. These results clearly dispute this faulty line of thinking. Therefore, employees should aim to detach psychologically from work (e.g., refrain from checking emails and doing work at home) whenever possible and include more recovery activities into their daily routine. Furthermore, this series of studies suggests that there may be several different recovery experiences that may be beneficial. Most importantly, the results suggest that interventions, such as the ABLE program, can help individuals implement daily recovery experiences. Therefore, employees may want to take advantage of similar work-based programs or individual coaching.

From an employer perspective, these results suggest that it is important to promote and support employees' efforts to engage in recovery experiences during their non-work time. Consistent with past research, Study 2 demonstrated that recovery activities tend to be associated with reduced strain and increased employee engagement (with the exception of psychological detachment; e.g., Kühnel et al., 2009; Siltaloppi et al., 2009; Sonnentag & Fritz, 2007; Sonnentag et al., 2008; Sonnentag et al., 2010).

Past research has demonstrated that employee engagement is related to positive organizational outcomes such as job performance (e.g., Bakker, Schaufeli, Leiter, & Taris, 2008). Furthermore, stress and strain can be extremely costly for organizations (e.g., Duxbury et al., 1992). Therefore, adopting policies and practices that encourage employees to engage in recovery experiences may lead to employees who are more engaged and productive and it may also significantly impact the bottom line.

Similarly, recovery experiences were increased through an intervention program in Study 3, which in turn were associated with decreased employee strain. Such programs could be made available through Employee Assistance Programs or offered independently by organizations to help promote positive help practices and prevent employee strain. When introducing such programs it is important that these initiatives are supported and positively rewarded throughout the organization. Kerr (1995) noted that many organizational policies are “fouled up” (p.7). Organizations may have mission statements and visions that espouse certain values, but their rewards systems are designed to reinforce something else. It seems that this mismatch between words and actions is often the case when it comes to promoting work-life balance in many organizations. It has become increasingly popular for organizations to adopt work-life balance policies, but many organizations are still reinforcing and encouraging workaholic tendencies (e.g., working late, responding to emails during non-work time). Given the findings that recovery experiences during non-work time can be valuable to both the health and well-being of employees and their engagement at work, it is important that organizations reassess both their formal and informal practices with

regard to work-life balance. Employees *and* organizations can benefit when employees are able to engage in recovery experiences during non-work time.

Conclusion

The results of this study extend the current literature on recovery in several ways. First, this research suggests that there may be up to six additional recovery experiences that offer incremental validity when predicting some strain and motivational outcomes. These new experiences, along with Sonnentag and Fritz's (2007) existing recovery experiences, can be factored into three higher-order recovery experiences. Second, recovery experiences are distinct from coping and they add incremental variance in strain and motivational outcomes after accounting for the variance explained by the coping subscales. Third, in line with the job-demands resource model dual process theory, the current research suggests that emotional and directed recovery experiences may be more associated more highly with positive mood (a motivational outcome) than with the strain outcomes. Fourth, the prevalence of recovery experiences may be increased through interventions programs, such as the one used in this study. Finally, part of the positive impact of this intervention on employee strain can be partially explained by the increases in recovery experiences. This series of studies suggests that recovery experiences are an important construct in occupational health psychology and warrant further empirical attention.

References

- Adams, G., King, L., & King, D. (1996). Relationships of job and family involvement, family social support, and work-family conflict with job and life satisfaction. *Journal of Applied Psychology, 81*(4), 411-420.
- Allen, T., Herst, D., Bruck, C., & Sutton, M. (2000). Consequences associated with work-to-family conflict: A review and agenda for future research. *Journal of Occupational Health Psychology, 5*(2), 278-308.
- American Educational Research Association, American Psychological Association, & National Council on Measurement in Education (1999). *Standards for Educational and Psychological Testing*. Washington DC: American Educational Research Association.
- Arbuckle, J. L. (2006). *Amos (Version 7.0)* [Computer Program]. Chicago: SPSS.
- Bakker, A., & Demerouti, E. (2007). The Job Demands-Resources model: State of the art. *Journal of Managerial Psychology, 22*, 309-328.
- Bakker, A. Schaufeli, W. Leiter, M. & Taris, T. (2008). Work Engagement: An emerging concept in occupational health psychology. *Work and Stress, 22*, 187-200.
- Barling, J. Kelloway, E.K., & Iverson, R.R. (2003). High quality work, job satisfaction, and occupational injuries. *Journal of Applied Psychology, 88*, 276-283.
- Bartone, P., Ursan, R., Wright., & Ingraham, L. (1989). Impact of a military air disaster. *Journal of Nervous Mental Disease, 177*, 317-328.

- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182.
- Baumeister, R.F. (2001). Ego depletion, the executive function, and self-control: An energy model of the self in personality. In B.W. Roberts & R. Hogan (Eds.); *Personality psychology in the workplace*. (pp 299-316). Washington, DC, US: American Psychological Association.
- Beehr, T. A., Walsh, J. T., & Taber, T. D. (1976). Relationships of stress to individually and organizationally valued states: Higher order needs as a moderator. *Journal of Applied Psychology*, 61, 41–47.
- Beehr, T., Farmer, S., Glazer, S., Gudanowski, D., & Nair, V. (2003). The enigma of social support and occupational stress: Source congruence and gender role effects. *Journal of Occupational Health Psychology*, 8, 220-231.
- Bentler, P.M., & Chou, C.-P. (1987). Practical issues in structural modeling. *Sociological Methods & Research*, 16, 78-117.
- Bhagat, R., Krishnan, B., Nelson, T., Leonard, K., Ford, D., & Billing, T. (2010). Organizational stress, psychological strain, and work outcomes in six national contexts: A closer look at the moderating influences of coping styles and decision latitude. *Cross Cultural Management*, 17(1), 10-29.
- Binnewies, C., Sonnentag, S., & Mojza, E. (2009a). Daily performance at work: Feeling recovered in the morning as a predictor of day-level job performance. *Journal of Organizational Behavior*, 30(1), 67-93

- Binnewies, C., Sonnentag, S., & Mojza, E. (2009b). Feeling recovered and thinking about the good sides of one's work. *Journal of Occupational Health Psychology*, 14(3), 243-256.
- Burke, R. (2010). Workplace stress and well-being across cultures: Research and practice. *Cross Cultural Management*, 17(1), 5-9.
- Byrne, B (2010). *Structural Equation Modeling With AMOS: Basic Concepts, Applications, and Programming, Second Edition*. New York, NY: Routledge Academic.
- Byrne, J., & Byrne, D. G. (1993). The effect of exercise on depression anxiety, and other mood states: A review. *Journal of Psychosomatic Research*, 37, 565-574.
- Canadian Index of Well-being (2010). Caught in the Time Crunch: Time Use, Leisure and Culture in Canada. Report released by the Canadian Index of Well-being. Retrieved June 19, 2010 from:
<http://www.cbc.ca/news/pdf/caughtinthetimecrunchjune15.pdf>
- Cartwright, S. & Cooper, C.L. (2005) Individually targeted interventions. In: J. Barling, E.K. Kelloway and M.R. Frone, Editors, *Handbook of work stress*. Sage, Thousand Oaks (2005).
- Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine*, 4(1), 92-100.
- Carver, C. S., Scheier, M. F. & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, 56, 267-283.

- Cattell, R. (1966). The scree test for number of factors, *Multivariate Behavioral Research*, 1, 245-276.
- Chu, H-I, Buckworth, J., Kirby, T.E., & Emery, C.F. (2009). Effect of exercise intensity on depressive symptoms in women, *Mental Health and Physical Activity*, 2, 37-43.
- Cohen, A. (2009). Individual values and the work/family interface: An examination of high tech employees in Israel. *Journal of Managerial Psychology*, 24(8), 814-832.
- Crocker, L., & Algina, J. (1986). *Introduction to classical and modern test theory*. New York: Holt, Rinehart and Winston.
- Cronbach, L. J. (1971). Test validation. In R. L. Thorndike (Ed.). *Educational Measurement (2nd Ed.)*. Washington, D.C.: American Council on Education.
- Day, A. L. & Livingstone, H. A. (2001). Chronic and acute stressors among military personnel: Do coping styles buffer their negative impact on health? *Journal of Occupational Health Psychology*, 6, 348-360.
- de Bloom, J., Geurts, S. A. E., Taris, T. W., Sonnentag, S., de Weerth, C., & Kompier, M. A.J. (2010). Effects of vacation from work on health and well-being: Lots of fun, quickly gone, *Work & Stress*, 24,196-216.
- Demerouti, E., Bakker, A., de Jonge, J. Janssen, P. & Schaufeli, W. (2001). Burnout and engagement at work as a function of demands and control. *Scandinavian Journal of Work Environment and Health*, 27, 279-286.
- Demerouti, E., Bakker, A., Nachreiner, F., & Schaufeli, W. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86, 499-512.

- Doty, D.H. & Glick, W.H. (1998). Common Method Bias: Does Common Method Variance Really Bias Results? *Organizational Research Methods*, 1, 374-406
- Duxbury, L. & Higgins, C. (2003). *Work-life conflict in Canada in the new millennium: A status report* Report prepared for Healthy Communities Division, Health Canada.
- Duxbury, L., Higgins, C., Lee, C., & Mills, S. (1992). *Balancing Work and Family: A Study of the Canadian Public Sector*. Prepared for the Department of Health and Welfare Canada (NHRDP), Ottawa.
- Dwyer, D. J. & Ganster, D. C. (1991). The effects of job demands and control on employee attendance and satisfaction. *Journal of Organizational Behavior*, 12, 595-608.
- Eden, D. (2001). Vacations and other respites: Studying stress on and off the job. *International Review of Industrial and Organizational Psychology*, 16, 121-146.
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175-191.
- Fredrickson, B. L. (2006). The Broaden-and-Build Theory of Positive Emotions. In Csikszentmihalyi, Mihaly, Csikszentmihalyi, Isabella Selega (Eds.): *A life worth living: Contributions to positive psychology*. (pp. 85-103). New York, NY, US: Oxford University Press.

- Fritz, C., & Sonnentag, S. (2005). Recovery, Health, and Job Performance: Effects of Weekend Experiences. *Journal of Occupational Health Psychology, 10*, 187-199.
- Fritz, C., & Sonnentag, S. (2006). Recovery, well-being, and performance-related outcomes: The role of workload and vacation experiences. *Journal of Applied Psychology, 91*(4), 936-945.
- Fritz, C., Yankelevich, M., Zarubin, A. & Barger, P. (in press). Happy, Healthy, and Productive? The role of detachment from work during non-work time. *Journal of Applied Psychology*.
- Frone, M. (2003). Work-family balance. *Handbook of occupational health psychology* (pp. 143-162). Washington, DC US: American Psychological Association.
- Gallup, G. Jr. & Castelli, J. (1989). *The people's religion: American faith in the '90s*. New York: Macmillan.
- Goetzel, R.Z., Jacobson, B.H., Aldana, S.G., Vardell, K., and Yee, L. (1998). Health care costs of worksite health promotion participants and non-participants. *Journal of Occupational and Environmental Medicine, 40*, 341-346.
- Greenglass, E. (2002). Work stress, coping, and social support: Implications for women's occupational well-being. In *Gender, work stress, and health* (pp. 85-96). Washington, DC US: American Psychological Association.
- Greenhaus, J., Parasuraman, S., & Collins, K. (2001). Career involvement and family involvement as moderators of relationships between work-family conflict and withdrawal from a profession. *Journal of Occupational Health Psychology, 6*(2), 91-100.

- Gregg, C., McRobert, J., & Piller, M. (2002). Primary prevention for menal health: Design and delivery of a generic stress management program. *Australian e-Journal for the Advancement of Mental Health*, 1, 1-6.
- Herzog, T., & Strevey, S. (2008). Contact with nature, sense of humor, and psychological well-being. *Environment and Behavior*, 40, 747-776.
- Hinken, T. (1998). A Brief Tutorial on the Development of Measures for Use in Survey Questionnaires. *Organizational Research Methods*, 1, 104-121.
- Hobfoll, S. (1998). *Stress, culture, and community: The psychology and philosophy of stress*. New York: Plenum Press.
- Hobfoll, S.E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44, 513-524.
- Hogan, J., & Roberts, B.W. (1996). Issues and non-issues in the fidelity-bandwidth trade-off. *Journal of Organizational Behavior*, 17, 627-637.
- Houston, D., McKee, K., Carroll, L., & Marsh, H. (1998). Using humour to promote psychological wellbeing in residential homes for older people. *Aging & Mental Health*, 2(4), 328-332.
- Hu, L. & Bentler P.M. (1999). Cutoff criteria for fit indexes in covariance structure analyses: Conventional criteria versus new alternatives. *Structual Equation Modeling*, 6, 1-55.
- Hurrell, J.J., Jr., (2005). Organizational stress intervention. In J. Barling, E.K. Kelloway & M. Frone (Eds). *Handbook of workplace stress*. (pp. 623-645). Thousand Oaks, CA: Sage.

- Kahn, R., & Byosiore, P. (1992). Stress in organizations. *Handbook of industrial and organizational psychology, Vol. 3 (2nd ed.)* (pp. 571-650). Palo Alto, CA US: Consulting Psychologists Press.
- Kelloway, E. K. (1998). *Using LISREL for structural equation modeling: A researcher's guide*. Thousand Oaks, CA US: Sage Publications, Inc.
- Kelloway, E. K. (1995). Structural equation modeling in perspective. *Journal of Organizational Behaviour, 16*, 215–224.
- Kelloway, E. K., Francis, L., Catano, V., & Teed, M. (2007). Predicting Protest. *Basic and Applied Social Psychology, 29*, 13-22.
- Kelloway, E. K., Hurrell, J. J., & Day, A. L. (2008). *Workplace Interventions for Occupational Stress*. In K. Näswell, M. Sverke, & J. Hellgren (Eds.) *The individual in the changing working life*. Cambridge University Press.
- Kerr, S. (1995). On the folly of rewarding A, while hoping for B. *Academy of Management Executive, 9*, 7-14.
- Kivimäki, M., Leino-Arjas, P., Kaila-Kangas, L., Luukkonen, R., Vahtera, J., Elovainio, M., et al. (2006). Is Incomplete Recovery From Work a Risk Marker of Cardiovascular Death? Prospective Evidence From Industrial Employees. *Psychosomatic Medicine, 68*, 402-407.
- Kristensen, T. (1996). Job stress and cardiovascular disease: A theoretic critical review. *Journal of Occupational Health Psychology, 1*, 246-260.
- Kroenke, K., Spitzer, R.L., Williams, J.B. (2003). The patient health questionnaire-2: validity of a two-item depression screener. *Medical Care, 41*, 1284–1292.

- Kühnel, J., Sonnentag, S., & Westman, M. (2009). Does work engagement increase after a short respite? The role of job involvement as a double-edged sword. *Journal of Occupational and Organizational Psychology*, 82(3), 575-594.
- Lance, C.E., Dawson, B., Birkelbach, D., & Hoffman, B.I. (2010). Method Effects, Measurement Error, and Substantive Conclusions. *Organizational Research Methods*, 13, 435-455.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, Appraisal, and Coping*. New York: Springer.
- Lazarus, R.S. (1974). *Psychology of coping: Issues of research and assessment*. In G.V. Coelho, D.A. Hamburg, & J.E. Hamburg, & J.E. Adams (Eds.), *Coping and Adaptation*. New York: Basic Books.
- Lefcourt, H. (2003). Humor as a moderator of life stress in adults. *Play therapy with adults* (pp. 144-165). Hoboken, NJ US: John Wiley & Sons Inc.
- LimeSurvey (2009). Rel 1.85+ 2009. Germany: LimeSurvey®
- Lindell, M.K. & Whitney, D.J. (2001). Accounting for Common Method Variance in Cross-Sectional Research Designs. *Journal of Applied Psychology*, 86, 114-121.
- Luszczynska, A., & Cieslak, R. (2005). Protective, promotive, and buffering effects of perceived social support in managerial stress: The moderating role of personality. *Anxiety, Stress & Coping: An International Journal*, 18, 227-244.
- Luthans, F., Avey, J.B., Avolio, B.J., Norman, S.M., & Combs, G.M. (2006). Psychological capital development: Toward a micro-intervention. *Journal of Organizational Behaviour*, 27, 387-393.

- Luthans, F., Avolio, B.J., & Avey, J.B. (2007). Positive psychological capital: Measurement and relationship with performance and satisfaction. *Personnel Psychology, 60*, 541-572.
- Martin, R. (2001) Humour, Laughter, and Physical Health: Methodological Issues and Research Findings. *Psychological Bulletin, 127*, 504-519.
- Maslach, C., & Jackson, S.E., & Leiter, M.P. (1996). Maslach Burnout Inventory Manual, 3rd ed. Consulting Psychologists Press, Palo Alto, CA.
- Meijman, T.F. and Mulder, G. (1998). Psychological aspects of workload. In P.J. Drenth, H. Thierry, and C.J. de Wolff (Eds), *Handbook of Work and Organizational Psychology*, 2nd ed., Erlbaum: Hove, pp. 5-33.
- Mojza, E., Lorenz, C., Sonnentag, S., & Binnewies, C. (2010). Daily recovery experiences: The role of volunteer work during leisure time. *Journal of Occupational Health Psychology, 15*, 60-74.
- Moos, R.H. & Schaefer, J.A. (1993). Coping Resources and Processes: Current Concepts and Measures, in Goldberger, A., Breznitz, S. (Eds), *Handbook of Stress*, 2nd ed., The Free Press: New York, NY, pp.234-57.
- Morris, W., & Reilly, N. (1987). Toward the self-regulation of mood: Theory and research. *Motivation and Emotion, 11*, 215-249.
- Murphy, K.R. & Davidshofer, C.O. (1994). *Psychological Testing* (3rd ed.). Englewood Cliffs, NJ: Prentice Hall.
- Nunnally, J.C. & Bernstein, I.H. (1994). *Psychometric Theory* (3rd ed.). Toronto, ON: McGraw Hill Inc.

- Ones, D.S. & Viswesvaran, C. (1996). Bandwidth-fidelity dilemma in personality measurement for personnel selection. *Journal of Organizational Behavior*, 17, 609-626.
- Parasuraman, S., & Greenhaus, J. H. (1997). The changing world of work and family. In S. Parasuraman & J. H. Greenhaus (Eds.), *Integrating work and family: Challenges and choices for a changing world*. Westport, CT: Quorum Books.
- Parker, G.B. & Brown, L.B. (1982). Coping behaviors that mediate between life events and depression. *Archives of General Psychiatry*, 39, 1386-1391.
- Parkinson, B. & Totterdell, P. (1999). Classifying Affect-regulation Strategies. *Cognition and Emotion*, 13, 277-303.
- Petruzzello, S. J., Landers, D. M., Hatfield, B. D., Kubitz, K. A., & Salazar, W. (1991). A meta-analysis on the anxiety-reducing effects of acute and chronic exercise. *Sports Medicine*, 11, 143-182.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88, 879-903.
- Puetz, T. W., O'Connor, P. J., & Dishman, R. K. (2006). Effects of chronic exercise on feelings of energy and fatigue: A quantitative synthesis. *Psychological Bulletin*, 132, 866-876.
- R Development Core Team (2009). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL <http://www.R-project.org>.

- Rammstedt, B., & John, O. (2007). Measuring personality in one minute or less: A 10-item short version of the Big Five Inventory in English and German. *Journal of Research in Personality, 41*(1), 203-212.
- Richardson, K., & Rothstein, H. (2008). Effects of occupational stress management intervention programs: A meta-analysis. *Journal of Occupational Health Psychology, 13*, 69-93.
- Rippere, V. (1977). 'What's the thing to do when you are feeling depressed?' – A pilot study. *Behavior Research and Therapy, 15*, 185-191.
- Robinson, B.E. (2000). A typology of Workaholics with Implications for Counselors. *Journal of Addictions and Offender Counseling, 21*, 34-49.
- Rosen, M. M., & Weil, L. D. (1997). *TechnoStress: Coping with technology @ work @ home @ play*. New York: John Wiley & Sons.
- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: a cross-national study. *Educational and Psychological Measurement, 66*, 701-716.
- Scheier, M., & Carver, C. (1993). On the power of positive thinking: The benefits of being optimistic. *Current Directions in Psychological Science, 2*(1), 26-30.
- Scheier, M.F. & Carver, C.S. (1992). Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive Therapy and Research, 16*, 201-228.
- Schmitt, N. (1996). Uses and abuses of coefficient alpha. *Psychological Assessment, 8*, 350-353.

- Schneider, R.J., Hough, L.M., & Dunnette, M.D. (1996). Broadsided by broad traits: How to sink science in five dimensions or less. *Journal of Organizational Behavior, 17*, 639-655.
- Segerstrom, S.C., Taylor, S.E., Kemeny, M.E., & Fahey, J.L. (1998). Optimism is associated with mood, coping and immune changes in response to stress. *Journal of Personality and Social Psychology, 74*, 1646-1655.
- Seligman, M.E.P. (2000). Optimism, pessimism, and mortality. *Mayo Clinic Proceedings, 75*, 133-134.
- Siltaloppi, M., Kinnunen, U., & Feldt, T. (2009). Recovery experiences as moderators between psychosocial work characteristics and occupational well-being. *Work & Stress, 23*, 330-348.
- Snyder, C.R. (2002). Hope theory: Rainbows in the mind. *Psychological Inquiry, 13*, 249-276.
- Sonnentag, S. (2001). Work, recovery activities, and individual well-being: A diary study. *Journal of Occupational Health Psychology, 6*, 196-210.
- Sonnentag, S. (2003). Recovery, work engagement, and proactive behavior: A new look at the interface between nonwork and work. *Journal of Applied Psychology, 88*, 518-528.
- Sonnentag, S. (2005). Burnout research: Adding an off-work and day-level perspective. *Work & Stress, 19*, 271-275.
- Sonnentag, S., & Bayer, U. (2005). Switching Off Mentally: Predictors and Consequences of Psychological Detachment From Work During Off-Job Time. *Journal of Occupational Health Psychology, 10*, 393-414.

- Sonnentag, S., Binnewies, C., & Mojza, E. (2008). 'Did you have a nice evening?' A day-level study on recovery experiences, sleep, and affect. *Journal of Applied Psychology, 93*, 674-684.
- Sonnentag, S. & Frese, M. (2003). Stress in organizations. In W. C. Borman, D. R. Ilgen, & R. J. Klimoski (Eds.), *Comprehensive handbook of psychology, Volume 12: Industrial and organizational psychology* (pp. 453-491). Hoboken: Wiley.
- Sonnentag, S., & Fritz, C. (2007). The Recovery Experience Questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology, 12*, 204-221.
- Sonnentag, S. & Jelden, S. (2009). Job Stressors and the Pursuit of Sports Activities: A Day-Level Perspective. *Journal of Occupational Health Psychology, 14*, 165-181.
- Sonnentag, S., & Krueger, U. (2006). Psychological detachment from work during off-job time: The role of job stressors, job involvement, and recovery-related self-efficacy. *European Journal of Work and Organizational Psychology, 15*, 197-217.
- Sonnentag, S., Kuttler, I., & Fritz, C. (2010). Job stressors, emotional exhaustion, and need for recovery: A multi-source study on the benefits of psychological detachment. *Journal of Vocational Behavior, 76*, 355-365.

- Sonnentag, S., Mojza, E., Binnewies, C., & Scholl, A. (2008). Being engaged at work and detached at home: A week-level study on work engagement, psychological detachment, and affect. *Work & Stress*, 22, 257-276.
- Sonnentag, S., & Niessen, C. (2008). Staying vigorous until work is over: The role of trait vigour, day-specific work experiences and recovery. *Journal of Occupational and Organizational Psychology*, 81, 435-458.
- Spector, P.E. (2006). Method Variance in Organizational Research: Truth or Urban Legend? *Organizational Research Methods*, 9, 221-232.
- Spector, P., Allen, T., Poelmans, S., Lapierre, L., Cooper, C., O'Driscoll, M., et al. (2007). Cross-national differences in relationships of work demands, job satisfaction, and turnover intentions with work-family conflict. *Personnel Psychology*, 60(4), 805-835.
- Spector, P.E., Cooper, C.L., Poelmans, S., Allen, T.D., O'Driscoll, M., Sanchez, J.I., et al. (2004). A cross-national comparative study of work/family stressors, working hours, and well-being: China and Latin America vs the Anglo world. *Personnel Psychology*, 57, pp. 119.
- SPSS for Windows (2008). Rel. 17.0 2008. Chicago: SPSS Inc.
- Statistics Canada. (2002 – updated in September 2004). *Canadian Community Health Survey – Mental health and well-being* (Catalogue No. 82-617, Table 26).
- Tabachnick, B.G. & Fidell, L.S. (2001). *Using Multivariate Statistics*(4th ed). Needham Heights, MA: Allyn & Bacon.

- Taylor, S. E., Klein, L.C., Lewis, B. P., Gruenewald, T. L., Gurung, R. A. R., & Updegraff, J. A. (2000). Female Responses to Stress: Tend and Befriend, Not Fight or Flight. *Psychological Review*, 107, 41-429.
- Terry, D., Neilsen, M., & Perchard, L. (1993). Effects of work stress on psychological well-being and job satisfaction: The stress-buffering role of social support. *Australian Journal of Psychology*, 45, 168-175.
- Thayer, R.E. (1978). Toward a psychological theory of multidimensional activation (arousal). *Motivation and Emotion*, 2, 1-34.
- Thayer, R.E. (1989). *The biopsychology of mood and arousal*. New York: Oxford University Press.
- Thayer, R.E., Newman, R., McClain, M. (1994). Self-regulation of mood: Strategies for changing a bad mood, raising energy, and reducing tension. *Journal of Personality and Social Psychology*, 67, 910-925.
- Thayer, R.E., Peters, D.P. III, Takahashi, P.J., & Birkhead-Flight, A.M. (1993). Mood and behavior (smoking and sugar snacking) following moderate exercise: A partial test of self-regulation theory. *Personality and Individual Differences*, 14, 97-104.
- Tice, D.M., Baumeister, R.F., Shmueli, D., & Muraven, M. (2007). Restoring the self: Positive affect helps improve self-regulation following ego depletion. *Journal of Experimental Social Psychology*, 43, 379-384.
- Van der Klink, J. J., Blonk, R. W., Schene, A. H., & van Dijk, F. J. (2001). The benefits of interventions for work-related stress. *American Journal of Public Health*, 91(2), 270-276.

- Vollrath, M., & Torgersen, S. (2000). Personality types and coping. *Personality and Individual Differences, 29*, 367–378.
- Wanous, J., Reichers, A., & Hudy, M. (1997). Overall job satisfaction: How good are single-item measures?. *Journal of Applied Psychology, 82*, 247-252.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scale. *Journal of Personality and Social Psychology, 54*, 1063-1070.
- Westman, M., & Eden, D. (1997). Effects of a respite from work on burnout: Vacation relief and fade-out. *Journal of Applied Psychology, 82*, 516-527.
- Westman, M., & Etzion, D. (2001). The impact of vacation and job stress on burnout and absenteeism. *Psychology & Health, 16*, 595-606.
- Westman, M., Etzion, D., & Chen, S. (2009). Crossover of positive experiences from business travellers to their spouses. *Journal of Managerial Psychology, 24*, 269-284.
- White, K., Kendrick, T., & Yardley, L. Change in self-esteem, self-efficacy and the mood dimensions of depression as potential mediators of the physical activity and depression relationship: Exploring the temporal relation of change. *Mental Health and Physical Activity, 2*, 44-52.
- Zijlstra, F., & Sonnentag, S. (2006). After work is done: Psychological perspectives on recovery from work. *European Journal of Work and Organizational Psychology, 15*, 129-138.

Appendix A –OVERVIEW OF THE FOCUS GROUP PROCESS

Thanks for participating/Overview of the study (Introduce Recorder)	2 minutes
Review important elements of consent form & answer any questions	3 minutes
Have participants fill out demographics and individually list things they do to recover from work stress. Please take a few minutes to think about what things you do after work that make you feel good and help you “recover” from work stress.	5 minutes
Have group come together: List activities: Now that you have had a chance to think about the things you do to “recover” from work stress, lets share some of these activities and strategies with the group. Feel free to add other things you hadn’t thought of previously as we start talking. Generate themes: If we look at all the activities and the strategies listed, why do these things help you unwind or make you feel better? Can we group any of these activities together?	15 minutes 10 minutes

FOCUS GROUP DEMOGRAPHIC INFORMATION

This data is used to help us describe the sample of people who participated in our focus groups. This information will be stored separately from your consent form and focus group data to ensure that it is anonymous. Please do not put your name or any other identifying information on this form.

Age: _____

Gender: _____

Occupation: _____

What best describes your current work status (please circle best answer):

Full-time

Part-time

Casual

Average Number of Hours per week spent at work: _____ hours/week

Brainstorm...

Please think about the things you do to help yourself recover from work. List anything you do - big or small - that make you feel better, energize you, or help you unwind after work. When you are done circle the activities that you find most effective in helping you recover.

THANK YOU FOR PARTICIPATING IN OUR FOCUS GROUP!

Appendix B –ACTIVITY SORT TASK

Instructions: The goal of this activity is to sort various activities that people use to “unwind” after work into several categories or themes. In order to do this, please think about why each of the activities make people feel good. I have provided a definition of eight different themes below. However, please feel free to add any additional themes that you think are helpful for classify the activities below.

Please indicate which theme each of the activities is associated with by placing an “X” in all the relevant columns. However, if you do select more than one theme please try to identify which theme is the MOST meaningful for each of the activities by circling the “X”.

Definitions of Themes:

Psychological Detachment: Forgetting about their work experiences and “switch-off mentally” during non-work time.

Relaxation: Engaging in pleasurable low-stimulation activities.

Mastery: Engaging in non-work activities that are challenging or promote learning and growth.

Control: Perceiving that one is in-charge and has control over their non-work time.

Physical activity: Engaging in physically stimulating activities.

Social Affiliation: Engaging in positive social interaction.

Hope/Optimism: Engaging in activities that generate positive feelings and excitement about the future.

Fun/Excitement: Engaging in activities that involve a sense of fun and/or excitement.

[illegible]

Appendix C- ITEM WRITING

Thank you for agreeing to participate! I am expanding the existing Recovery Experiences Questionnaire created by Sonnentag & Fritz (2007), and I would like your assistance in generating new items.

- I have included the original Recovery Experiences Questionnaire to help you develop your items. If there are any additional items that you think should be added to the existing subscales (i.e., detachment, relaxation, mastery, control) please feel free to add them in the blanks provided.
- In addition to these 4 experiences, I have identified 5 other types of “experiences” that may be relevant to recovery. I have provided brief definitions of each of all of the experiences. Please develop 5-7 items for each of these new 5 experiences.

Original Recovery Experiences Scale (Sonnentag & Fritz, 2007)

During my time after work...

	REQ
Psych. Detach.	I forgot about work.
	I didn't think about work at all.
	I distanced myself from my work.
	I got a break from the demands of work.
Relaxation	I kicked back and relaxed.
	I did relaxing things.
	I used the time to relax.
	I took time for leisure.
Mastery	I learned new things.
	I sought out intellectual challenges.
	I did things that challenged me.
	I did something to broaden my horizons.
Control	I felt like I could decide for myself what to do.
	I decided my own schedule.
	I determined for myself how I would spend my time.
	I took care of things the way that I wanted them done.

THANK YOU!!

Experiences	Items (5-7 each)
	<i>During my time after work...</i>
Hope/Optimism: experiencing positive feelings and excitement about the future.	1.
	2.
	3.
	4.
Fun/Excitement: experiencing feelings of fun and/or excitement.	1.
	2.
	3.
	4.
Physical activity: experiencing physically stimulating activity.	1.
	2.
	3.
	4.
Social Affiliation: experiencing positive social interaction and a sense of social connection.	1.
	2.
	3.
	4.
Self-reward: experiencing well- deserved rewards (e.g., "me-time").	1.
	2.
	3.
	4.

Appendix D - ITEM SORT TASK

Thank you for agreeing to participate!

Position (Professor, MSc Student, etc): _____

Age: _____ **Gender:** _____

Instructions: Please indicate which construct each of the following items is associated with by putting an “x” in the appropriate column. If you believe an item taps into more than one of these constructs please indicate this by putting an “x” in all of the relevant columns and circling the “x” in the most relevant column. Definitions of each of the constructs are provided to facilitate this process. Please consult the definition as necessary while completing this task. If you believe an item does not tap into any of these constructs please indicate this by putting “none” in the comments column. If you see items that you believe are redundant you can also indicate this by noting the number of the item that is similar in the comments column.

Additionally, please provide any comments on the specific items (e.g., wording problems, suggested changes/deletion) in the comments space provided. Overall comments can be recorded at the end of the sort-task.

You participation is greatly appreciated. Thank you so much for your time!

Definitions of Constructs:

Psychological Detachment: Forgetting about their work experiences and “switch-off mentally” during non-work time.

Relaxation: Engaging in pleasurable low-stimulation activities.

Mastery: Engaging in non-work activities that are challenging or promote learning and growth.

Control: Perceiving that one is in-charge and has control over their non-work time.

Self-reward: experiencing well-deserved rewards (e.g., “me-time”).

Hope/Optimism: experiencing positive feelings and excitement about the future.

Physical activity: experiencing physically stimulating activity.

Social Affiliation: experiencing positive social interaction and a sense of social connection.

Fun/Excitement: experiencing feelings of fun and/or excitement

[illegible]

Appendix E – ITEM REVIEW

Please email this completed document back to me (sonya.stevens@smu.ca) by Tuesday, August 4th.

Job: _____ Gender: _____

Instructions: I am expanding the existing Recovery Experiences Questionnaire (REQ) created by Sonnentag & Fritz (2007), and I would like your assistance in reviewing new items. The existing 16-item REQ measures 4 different experiences (i.e., mastery, relaxation, psychological detachment, control) and includes 4-items per construct. The items that measure each of these experiences are presented below (indicated with bolding and labeled with: “Original item”) along with 1-4 possible new items.

Additionally, I have identified 5 other types of “experiences” that may be relevant to recovery: social affiliation, physical activity, fun & humour, self-reward, and hope/optimism. There have been 5-7 new items created for each of these new experiences which are all listed in the table below.

I would like your help to review all of the new items for readability, clarity, grammar, potential bias, relevance and redundancy. Please refer to the definitions provided for all of the experiences when reviewing the items. Comments about the specific items can be made in the space provided. If there are any additional items that you think should be added please feel free to add them in the blanks provided. Overall comments can be recorded in the space below.

Your participation is greatly appreciated. Thank you so much for your time!

During my time after work.....	Comments
<p>Psychological Detachment: Forgetting about their work experiences and “switch-off mentally” during non-work time.</p> <p>I forget about work. (Original item)</p> <p>I don't think about work at all. (Original item)</p> <p>I distance myself from my work. (Original item)</p> <p>I get a break from the demands of work. (Original item)</p>	
<p>Relaxation: Engaging in pleasurable low-stimulation activities.</p> <p>I kick back and relax. (Original item)</p> <p>I do relaxing things. (Original item)</p> <p>I use the time to relax. (Original item)</p> <p>I take time for leisure. (Original item)</p>	
<p>Mastery: Engaging in non-work activities that are challenging or promote learning and growth.</p> <p>I learn new things. (Original item)</p> <p>I seek out intellectual challenges. (Original item)</p> <p>I do things that challenge me. (Original item)</p> <p>I do something to broaden my horizons. (Original item)</p>	
<p>Control: Perceiving that one is in-charge and has control over their non-work time.</p> <p>I feel like I can decide for myself what to do. (Original item)</p> <p>I decide my own schedule. (Original item)</p> <p>I determine for myself how I will spend my time. (Original item)</p> <p>I take care of things the way that I want them done. (Original item)</p>	

During my time after work.....	Comments
<p>OTHER items related to feelings of control:</p> <p>I get organized (e.g., make lists, tidy up)</p> <p>I get things checked off my "to-do" list.</p> <p>Other:</p>	<p><u>Please note:</u> These types of items came up in focus groups, but may not fit into the traditional definition of control. <i>Thoughts?</i></p>
<p>Social Affiliation: experiencing positive social interaction & a sense of social connection.</p> <p>I spend time quality time with my friends and/or family.</p> <p>I socialize with others.</p> <p>I keep in touch with friends and/or family (e.g., phone, facebook).</p> <p>I spend time with people I care about.</p> <p>Other:</p>	<p><u>Specific question:</u> Should friends and family be in separate items? (i.e., I spend time quality time with my friends AND I spend time quality time with my family.)</p>
<p>Physical activity: experiencing physically stimulating activity.</p> <p>I do things that are physically demanding.</p> <p>I engage in activities that increase my heart rate.</p> <p>I engage in physical activity.</p> <p>I participate in sports or active recreational activities.</p> <p>I exercise or go to the gym.</p> <p>I did things that required physical exertion.</p> <p>Other:</p>	

During my time after work....	Comments
<p>Hope/Optimism: experiencing positive feelings and excitement about the future.</p> <p>I plan activities, trips, or events.</p> <p>I daydream about my future</p> <p>I think of how I will spend my weekend or my next vacation.</p> <p>I gather information about things that I aspire to achieve or attain in the future (e.g., dream job, new house, vacation).</p> <p>I like to think about all the positive things that are going to happen this week.</p> <p>I look forward to upcoming events.</p> <p>Other:</p>	
<p>Fun/Humour: experiencing feelings of lightheartedness, fun, and/or humour</p> <p>I do things that make me laugh</p> <p>I do things that are fun.</p> <p>I do activities that I find exciting.</p> <p>I try to see the humour in situations.</p> <p>I joke around.</p> <p>Other:</p>	
<p>Self-reward: experiencing well-deserved rewards (e.g., "me-time").</p> <p>I indulge in "guilty pleasures".</p> <p>I spend some quality "me time."</p> <p>I reward myself with something special.</p> <p>I take time to do the things that I enjoy.</p> <p>I pamper myself.</p> <p>I do things for myself.</p> <p>Other:</p> <p>Other:</p>	

Appendix F – FINAL RECOVERY ITEMS

The following questions are about things you may do during non-work time (e.g., evenings, weekends). Thinking about the past few weeks, please use a 5-point scale (1 = I do not agree at all; 5= I fully agree) to indicate the extent to which you agree with each of the following statements.

1	2	3	4	5
<i>I do not agree at all</i>				<i>I fully agree</i>

During my time after work...

	REQ – revised
Psych. Detachment	1. I forgot about work.
	2. I didn't think about work at all.
	3. I distanced myself from my work.
	4. I got a break from the demands of work.
Relaxation	5. I kicked back and relaxed.
	6. I did relaxing things.
	7. I used the time to relax.
	8. I took time for leisure.
Mastery	9. I learned new things.
	10. I sought out intellectual challenges.
	11. I did things that challenged me.
	12. I did something to broaden my horizons.
Control	13. I felt like I could decide for myself what to do.
	14. I decided my own schedule.
	15. I determined for myself how I would spend my time.
	16. I took care of things the way that I wanted them done.
Organ- ization	17. I got myself organized (e.g., made lists, cleaned up)
	18. I got things checked off my "to-do" list.
Social Affilia- tion	19. I spent quality time with my friends and/or family.
	20. I socialized with others.

	21. I kept in touch with friends and/or family (e.g., phone, facebook, email).
	22. I spent time with people I care about.
Physical Activity	23. I did things that were physically demanding (e.g., housework; gardening; exercise).
	24. I engaged in activities that increased my heart rate.
	25. I engaged in physical activity.
	26. I participated in sports or active recreational activities.
	27. I did things that required physical exertion.
Hope/Optimism	28. I daydreamed about my future.
	29. I planned activities, trips, or events.
	30. I thought about what I would like to do or attain in the future (e.g., vacation, new house, dream job).
	31. I thought about positive things that are going to happen.
	32. I looked forward to upcoming events.
Fun/Humour	33. I did things that made me laugh.
	34. I did things that were fun.
	35. I engaged in activities that I find exciting.
	36. I tried to see the humour in situations.
	37. I joked around.
Self-Reward	38. I spent some quality "me time".
	39. I rewarded myself with something special.
	40. I took the time to do the things that I enjoy ¹ .
	41. I pampered myself.
	42. I treated myself by buying something that I really wanted.

¹ Deleted in Study 2.

Appendix G

Scree Plot

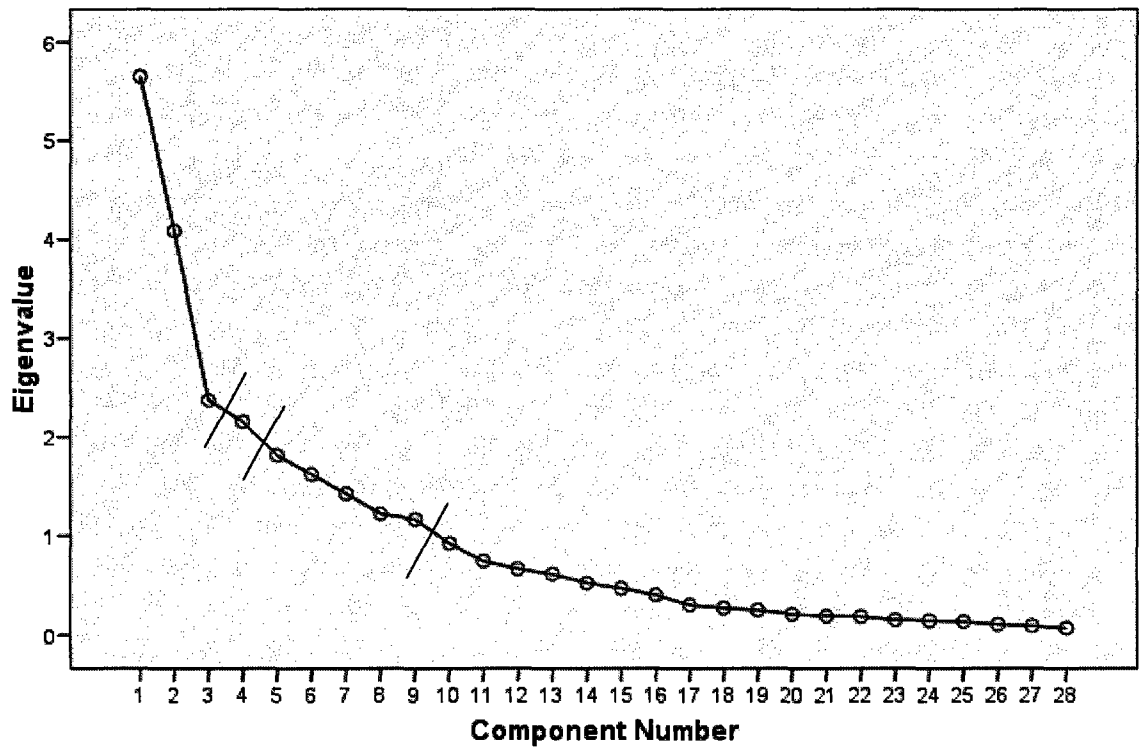


Figure G-1. Scree Plot for the Principal Components Analysis of Coping Items

Table G-1.

Communalities and Pattern Matrix for Principal Components Analysis of Coping Items (N = 236)¹

	Items	Communalities	Component			
			1	2	3	4
Active Coping 1	I've been concentrating my efforts on doing something about the situation that I am in.	.71	.83	-.02	.01	-.07
Active Coping 2	I've been taking action to make my situation better.	.62	.69	-.20	.09	-.12
Planning 1	I've been trying to come up with a strategy about what to do.	.74	.85	.03	-.01	-.07
Planning 2	I've been thinking hard about what steps to take.	.68	.81	.07	.04	-.09
Positive Reframing 1	I've been trying to see it in a more positive light, to make it seem more positive.	.55	.35	-.04	.50	-.21
Positive Reframing 2	I've been looking for something good in what is happening.	.53	.24	-.07	.63	-.03
Acceptance 1	I've been accepting the reality of the fact that it has happened.	.61	.27	-.05	.69	.15
Acceptance 2	I've been learning to live with it.	.61	-.01	.04	.80	.24
Humour 1	I've been making jokes about it.	.60	-.22	-.12	.74	-.16
Humour 2	I've been making fun of the situation.	.59	-.32	-.09	.74	-.11
Self-Distraction 1	I've been turning to work or other activities to take my mind off things.	.22	.16	.19	.32	-.11
Self-Distraction 2	I've been doing something to think about it less, such as going to the movies, watching TV, reading, daydreaming, sleeping or shopping.	.21	.13	.23	.27	-.16
Religion 1	I've been trying to find comfort in my religion or spiritual beliefs.	.18	-.02	.13	.06	-.37
Religion 2	I've been praying or meditating.	.19	.01	.09	-.05	-.42

Continued on next page.

	Item	Communalities	Components			
			1	2	3	4
Emotional Support 1	I've been getting emotional support from others.	.62	.05	-.16	.13	-.75
Emotional Support 2	I've been getting comfort and understanding from someone.	.66	.05	-.21	.12	-.77
Instrumental Support 1	I've been trying to get advice or help from other people about what to do.	.72	.33	-.08	-.05	-.75
Instrumental Support 2	I've been getting help and advice from other people.	.70	.29	-.08	-.09	-.78
Venting 1	I've been saying things to let my unpleasant feelings escape.	.44	-.20	.47	.11	-.34
Venting 2	I've been expressing my negative feelings.	.34	-.24	.27	.05	-.42
Denial 1	I've been saying to myself "this isn't real."	.42	-.12	.56	-.06	-.22
Denial 2	I've been refusing to believe that it has happened.	.49	-.11	.64	-.12	-.14
Substance Use 1	I've been using alcohol or other drugs to make myself feel better.	.45	.13	.67	.08	.25
Substance Use 2	I've been using alcohol or other drugs to help get me through it.	.47	.13	.69	.03	.21
Behavioural Disengagement 1	I've been giving up trying to deal with it.	.53	-.26	.65	-.04	.08
Behavioural Disengagement 2	I've been giving up the attempt to cope.	.59	-.22	.71	-.03	.04
Self-blame 1	I've been criticizing myself.	.37	.04	.58	-.04	-.14
Self-blame 2	I've been blaming myself for things that happened.	.43	.12	.66	-.07	-.01

¹Factor loadings above .32 are **bolded** and *italicized*.

Table H-1.

Summary of the hierarchical regression analyses demonstrating the incremental prediction of the existing recovery factors above and beyond the new recovery factors on study outcomes.¹

Predictor	Strain		Emo. Exh.		Cynicism		Prof. Efficacy		Vigor		Absorption		Dedication		Pos. Mood	
	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
<i>Step 1</i>		.06 ^a		.08		.06		.13 ^b		.11 ^c		.05 ^a		.08 ^b		.37 ^c
Planning	-.01		-.18		-.14		.15		.13 ^a		.08		.08		.12 ^a	
Physical activity	-.13 ^a		-.14		-.02		.09		.19 ^b		.16 ^a		.13		.21 ^c	
Social Affiliation	-.11		.15		.08		.10		-.01		.04		.00		-.07	
Hope/Optimism	.13		-.01		.13		.02		-.13		-.12		-.11		.06	
Fun/Humour	-.12		-.18		-.22		.13		.20 ^a		.11		.27 ^b		.38 ^c	
Self-Reward	.00		.10		-.07		.00		.02		-.11		-.10		.11	
<i>Step 2</i>		.04 ^a		.05		.02		.01		.04 ^a		.07 ^c		.06 ^b		.04 ^b
Planning	.03		-.16		-.09		.11		.08		.02		.02		.07	
Physical activity	-.14 ^a		-.13		.00		.07		.18		.15 ^a		.14		.19	
Social Affiliation	-.06		.19		.08		.10		-.04		.02		-.03		-.10	
Hope/Optimism	.13		-.03		.14		.03		-.13		-.12		-.11		.05	
Fun/Humour	-.05		-.09		-.20		.11		.15		.10		.26 ^b		.30	
Self-Reward	.06		.17		-.06		-.01		-.02		-.13		-.12		.06	
Psych. Detach.	-.02		-.11		-.05		-.01		-.13 ^b		-.21 ^b		-.13 ^a		-.07	
Relaxation	-.13		-.14		.07		-.05		.04		-.03		-.05		.09	
Mastery	.03		-.09		-.08		.09		.09		.07		-.01		.12	
Control	-.19 ^b		-.08		-.11		.10		.18 ^b		.20 ^b		.26 ^c		.16	
Total R²		.10^b		.13^a		.07		.14		.15^c		.12^c		.14^c		.41^c

^a $p < .05$; ^b $p < .01$; ^c $p < .001$

¹ Note: N for analyses involving strain=286; N for analyses involving emotional exhaustion and cynicism = 145; N for analyses involving professional efficacy=127; N for analyses involving vigor, dedication, and absorption=283; N for analyses involving positive mood=286

Appendix I

When an exploratory principal components analysis using an orthogonal varimax rotation was conducted with the three higher-order recovery scales and the coping scales, results were similar. The analysis revealed three eigenvalues over 1, accounting for 65.98% of the variance in the solution and the Scree test (Cattell, 1966) also suggested that a three-factor solution was appropriate (see Figure I-1). The higher-order recovery scales loaded on the first component (loadings ranged from .67 to .81), the problem-focused, emotion-focused, and cognitive-focused coping scales loaded on the second component (loadings ranged from .53 to .81) and the maladaptive coping scale loaded onto the third component (loading = .86; see Table I-1). Problem-focused coping also negatively loaded on the third component with maladaptive coping (loading = -.59). Again, this provides additional evidence that recovery and coping are distinct constructs.

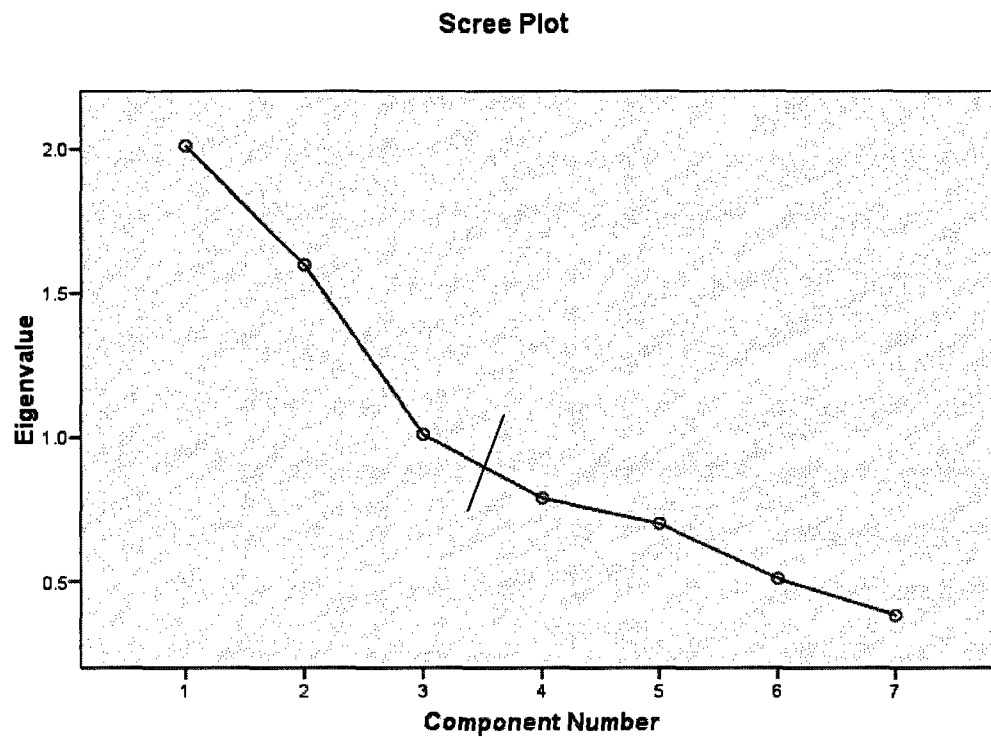


Figure I-1. Scree Plot for the Principal Components Analysis of Coping and Higher-Order Recovery Scales.

Table I-1.

*Pattern matrix for Principal Components Analysis of Recovery and Coping Subscales**(N = 236)¹*

	Communalities	Component		
		1	2	3
Psychological Detachment	.47	.67	-.09	.10
Emotional Recovery	.70	.79	.10	-.20
Directed Recovery	.66	.81	.12	-.13
Problem-focused coping	.64	.08	.53	-.59
Emotion-focused coping	.69	.02	.81	.15
Cognitive-focused coping	.67	.04	.82	-.02
Maladaptive coping	.79	-.10	.25	.85

¹*Factor loadings above .32 are bolded and italicized.*

Table J-1.

Summary of the hierarchical regression analyses demonstrating the incremental prediction of coping subscales above and beyond recovery variables on study outcomes.¹

Predictor	Strain		Emotional Exhaustion		Cynicism		Professional Efficacy		Vigor		Absorption		Dedication		Positive Mood	
	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
<i>Step 1</i>																
Psych. Detach.	.00	.07 ^c	-.14	.06	-.02	.04	-.03	.08 ^a	-.14 ^a	.10 ^c	-.21 ^b	.08 ^c	-.14 ^a	.09 ^c	-.07	.29 ^c
Relaxation	-.15 ^a		-.02		.02		.02		.06		-.06		-.01		.22 ^c	
Mastery	.02		-.09		-.10		.16		.14 ^a		.08		.04		.27 ^c	
Control	-.19 ^b		-.10		-.15		.21 ^a		.22 ^b		.21 ^b		.28 ^c		.26 ^c	
<i>Step 2</i>																
Psych. Detach.	-.01	.03	-.11	.06	-.05	.03	.00	.05	-.14 ^a	.05 ^a	-.22 ^b	.04	-.15 ^a	.05 ^a	-.07	.12 ^c
Relaxation	-.12		-.12		.09		-.05		.04		-.04		-.05		.08	
Mastery	.05		-.08		-.06		.09		.08		.06		-.03		.13 ^a	
Control	-.19 ^b		-.07		-.11		.10		.18 ^b		.20 ^b		.25 ^c		.17 ^b	
Planning	.04		-.16		-.09		.10		.07		.02		.01		.07	
Physical activity	-.12		-.12		.01		.07		.17 ^b		.15 ^a		.13 ^a		.19 ^c	
Social Affiliation	-.06		.20		.09		.10		-.04		.02		-.03		-.10	
Hope/Optimism	.12		-.02		.15		.02		-.13		-.13		-.10		.04	
Fun/Humour	-.07		-.10		-.22		.10		.16		.10		.27 ^b		.30 ^c	
Self-Reward	.03		.16		-.08		-.02		-.02		-.13		-.12		.07	
<i>Step 3</i>																
Psych. Detachment	-.02	.11 ^c	-.12	.07 ^a	-.03	.08 ^a	-.04	.03	-.13	.03	-.22 ^b	.02	-.15 ^a	.05 ^b	-.06	.02 ^a
Relaxation	-.05		-.08		.15		-.09		-.00		-.05		-.09		.05	
Mastery	.02		-.09		-.08		.12		-.09		.08		-.01		.13	
Control	-.13		-.06		-.07		.08		.16 ^a		.18 ^a		.22 ^b		.16	

Continued on next page.

Predictor	Strain		Emotional		Cynicism		Professional Efficacy		Vigor		Absorption		Dedication		Positive Mood	
	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
...continued																
Organization	.01		-.17		-.09		.10		.08		.04		.03		.06	
Physical activity	-.16 ^a		-.15		-.02		.07		.20 ^b		.16 ^a		.16 ^c		.22 ^c	
Social Affiliation	-.01		.22		.13		.09		-.07		-.01		-.07		-.12	
Hope/Optimism	.07		-.05		.10		.05		-.10		-.10		-.07		.05	
Fun/Humour	-.03		-.06		-.18		.11		.13		.10		.25 ^b		.27 ^c	
Self-Care	.01		.14		-.09		-.04		-.00		-.13		-.11		.08	
Problem-focused	.16 ^b		.18 ^a		.08		.04		-.07		-.08		-.11		-.04	
Emotion-focused	.08		.13		.02		.10		-.04		.08		.05		.02	
Cognitive-focused	-.01		-.09		.00		-.10		.06		-.08		-.01		.09	
Maladaptive	.31 ^c		.17		.30 ^c		-.15		-.17 ^b		-.13 ^a		-.23 ^c		-.15 ^b	
Total R²		.21^c		.18^a		.14		.16		.17^c		.14^c		.18^c		.43^c

^a $p < .05$; ^b $p < .01$; ^c $p < .001$

Note: N for analyses involving strain=280; N for analyses involving emotional exhaustion and cynicism = 141; N for analyses involving professional efficacy=123; N for analyses involving vigor, dedication, and absorption=276; N for analyses involving positive mood=279.

Appendix K

When entered in the second step after the coping subscales, the three higher-order recovery scales accounted for a significant amount of additional variance in all outcomes, except cynicism (R^2_{change} ranged from .04 to .30, $p < .05$; see Table K-1). Specifically, psychological detachment was negatively related to emotional exhaustion ($\beta = -.17$, $p < .05$), vigor ($\beta = -.13$, $p < .05$), absorption ($\beta = -.22$, $p < .001$), and dedication ($\beta = -.16$, $p < .01$). Emotional recovery was negatively related to strain ($\beta = -.16$, $p < .05$) and positively related to positive mood ($\beta = .29$, $p < .001$). Directed recovery seemed to account for most of the variance in most of these outcomes. Directed recovery was negatively related to emotional exhaustion ($\beta = -.29$, $p < .01$) and positively related to professional efficacy ($\beta = .26$, $p < .05$), vigor ($\beta = .35$, $p < .001$), absorption ($\beta = .31$, $p < .001$), dedication ($\beta = .29$, $p < .001$), and positive mood ($\beta = .38$, $p < .001$).

When the reverse analysis was conducted, coping also accounted for incremental validity in strain and motivational outcomes after controlling for the three higher-order recovery scales (see Table K-2). When entered in the second step after the three higher-order recovery scales, the four coping subscales accounted for a significant amount of additional variance in all outcomes, except professional efficacy (R^2_{change} ranged from .02 to .15, $p < .05$)

Table K-1.

Summary of the hierarchical regression analyses demonstrating the incremental prediction of recovery higher-order scales above and beyond coping variables on study outcomes.

Predictor	Strain		Emo. Exh.		Cynicism		Prof. Efficacy		Vigor		Absorption		Dedication		Pos. Mood	
	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
<i>Step 1</i>																
Problem-focused	.13 ^a	.16 ^c	.09	.07	.05	.10 ^b	.09	.08 ^a	-.02	.05 ^b	-.05	.02	-.08	.07 ^b	.06	.09 ^c
Emotion-focused	.09		.16		.02		.13		-.06		.05		.02		.01	
Cognitive-focused	-.01		-.13		-.06		.04		.09		-.06		.02		.17 ^a	
Maladaptive	.35 ^c		.18 ^a		.32 ^c		-.23 ^a		-.21 ^b		-.14 ^a		-.26 ^c		-.26 ^c	
<i>Step 2</i>																
Problem-focused	.17 ^b	.04 ^b	.15	.08 ^b	.08	.02	.03	.07 ^a	-.09	.11 ^c	-.09	.10 ^c	-.13 ^a	.07 ^c	-.04	.30 ^c
Emotion-focused	.09		.17 ^a		.02		.10		-.05		.07		.03		.01	
Cognitive-focused	.01		-.10		-.04		-.05		.06		-.08		.00		.10	
Maladaptive	.32 ^c		.14		.30 ^b		-.18		-.19 ^b		-.16 ^b		-.26 ^c		-.15 ^b	
Psych. Detachment	-.02		-.17 ^a		.00		-.07		-.13 ^a		-.22 ^c		-.16 ^b		-.05	
Emotional Rec.	-.16 ^a		.12		.04		.07		-.01		-.12		-.03		.29 ^c	
Directed Rec.	.02		-.29 ^b		-.15		.26 ^a		.35 ^c		.31 ^c		.29 ^c		.38 ^c	
Total R²		.20^c		.15^a		.12		.15		.16^c		.12^c		.14^c		.39^c

^a $p < .05$; ^b $p < .01$; ^c $p < .001$

Note: N for analyses involving strain=283; N for analyses involving emotional exhaustion and cynicism = 142; N for analyses involving professional efficacy=124; N for analyses involving vigor, dedication, and absorption=278; N for analyses involving positive mood=282.

Table K-2.

Summary of the hierarchical regression analyses demonstrating the incremental prediction of coping scales above and beyond recovery higher-order scales on study outcomes.

Predictor	Strain		Emo. Exh.		Cynicism		Prof. Efficacy		Vigor		Absorption		Dedication		Pos. Mood	
	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
<i>Step 1</i>		.05 ^b		.08 ^b		.03		.12 ^b		.12 ^c		.09 ^c		.07 ^b		.37 ^c
Psych. Detachment	-.03		-.16		-.03		-.03		-.13 ^a		-.21 ^b		-.15 ^a		-.05	
Emotional Rec.	-.13		.09		.04		.11		.05		-.09		-.03		.34 ^c	
Directed Rec.	-.10		-.26 ^a		-.14		.27 ^a		.32 ^c		.28 ^c		.24 ^b		.37 ^c	
<i>Step 2</i>		.15 ^a		.07 ^a		.08 ^a		.04		.04 ^a		.04 ^a		.07 ^c		.02 ^a
Psych. Detachment	-.02		-.17 ^a		.00		-.07		-.13 ^a		-.22 ^c		-.16 ^b		-.05	
Emotional Rec.	-.05		.12		.04		.07		-.01		-.12		-.03		.29 ^c	
Directed Rec.	-.16 ^a		-.29 ^b		-.15		.26 ^a		.35 ^c		.31 ^c		.29 ^a		.38 ^c	
Problem-focused	.17 ^b		.15		.08		.03		-.09		-.09		-.13 ^a		-.04	
Emotion-focused	.09		.17 ^a		.02		.10		-.05		.07		.03		.01	
Cognitive-focused	.01		-.10		-.04		-.05		.06		-.08		.00		.10	
Maladaptive	.32 ^c		.14		.30 ^b		-.18		-.19 ^b		-.16 ^b		-.26 ^c		-.15 ^b	
Total R²		.20 ^c		.15 ^a		.11		.15		.16 ^c		.12 ^c		.14 ^c		.40 ^c

^a $p < .05$; ^b $p < .01$; ^c $p < .001$

Note: N for analyses involving strain=283; N for analyses involving emotional exhaustion and cynicism = 142; N for analyses involving professional efficacy=124; N for analyses involving vigor, dedication, and absorption=278; N for analyses involving positive mood=282.

Appendix L

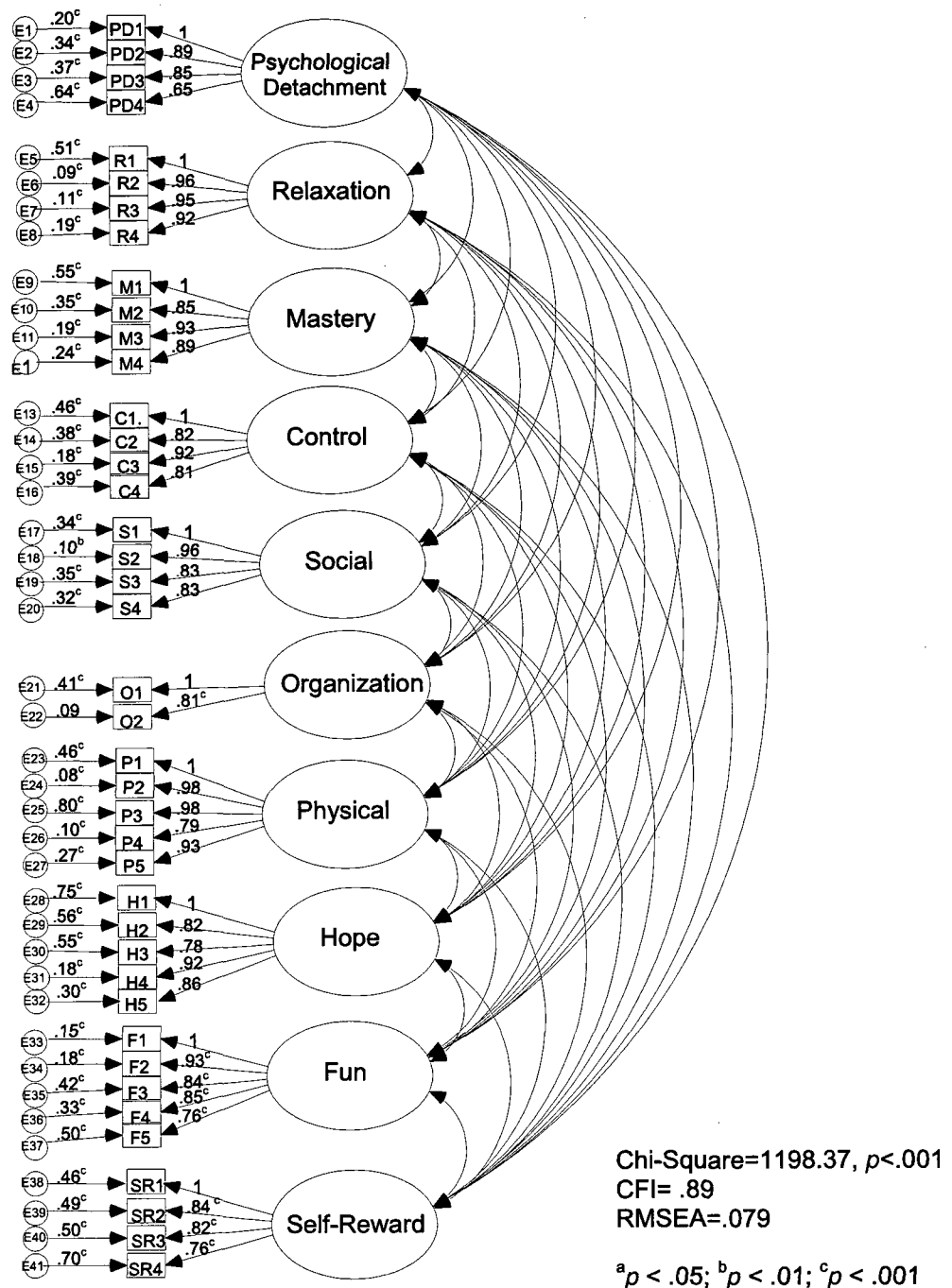


Figure L-1. Confirmatory Factor Analysis for the Ten Factor Model. (N=102)

Appendix M

I conducted the 2 X 2 repeated measures MANOVA with the three higher-order recovery scales (see Table M-1). Similar to the MANOVA with the 10 subscales, the Group x Time interaction was significant (Wilks' $\lambda=.87$, $F(3, 98)= 5.10$, $p<.01$, $\eta^2=.14$). Individual tests indicated significant Group x Time interactions for all three higher-order recovery scales: psychological detachment ($F(1, 100)= 5.25$, $p<.05$, $\eta^2=.05$); emotional recovery ($F(1, 100)= 9.11$, $p<.01$, $\eta^2=.08$); directed recovery ($F(1, 100)= 11.22$, $p<.01$, $\eta^2=.10$). The Group x Time interactions are plotted in Figures M-1 and M-2.

I examined the simple effects for these interactions. The pattern of results was the same for psychological detachment and emotional recovery. From Time 1 to Time 2, these two higher-order recovery experiences significantly increased in the ABLE group (psychological detachment: $F(1,55)=19.64$, $p<.001$; emotional recovery: $F(1,55)=13.66$, $p<.01$) and did not significantly change in the wait-list control group (psychological detachment: $F(1,45)=1.14$, $p>.05$; emotional recovery: $F(1,45)=.66$, $p>.05$). From Time 1 to Time 2, directed recovery experiences did not significantly change in the ABLE group ($F(1,55)=3.35$, $p>.05$) and they significantly decreased in the wait-list control group ($F(1,45)=7.66$, $p<.01$).

Table M-1.

Summary of higher-order recovery scale means and standard errors for the ABLE treatment participants and the wait-list control group at Time 1 and Time 2 (N=102).

	ABLE treatment group				Wait-list control group			
	Time 1		Time 2		Time 1		Time 2	
	M	SE	M	SE	M	SE	M	SE
Psych. Detachment	2.67	.13	3.21	.14	2.89	.15	3.03	.15
Emotional	3.34	.10	3.67	.10	3.11	.11	3.03	.11
Self-reward	3.25	.10	3.42	.10	3.19	.11	2.86	.11

Please note: EMM = Estimated Marginal Mean; SE = Standard Error

^a $p < .05$; ^b $p < .01$; ^c $p < .001$

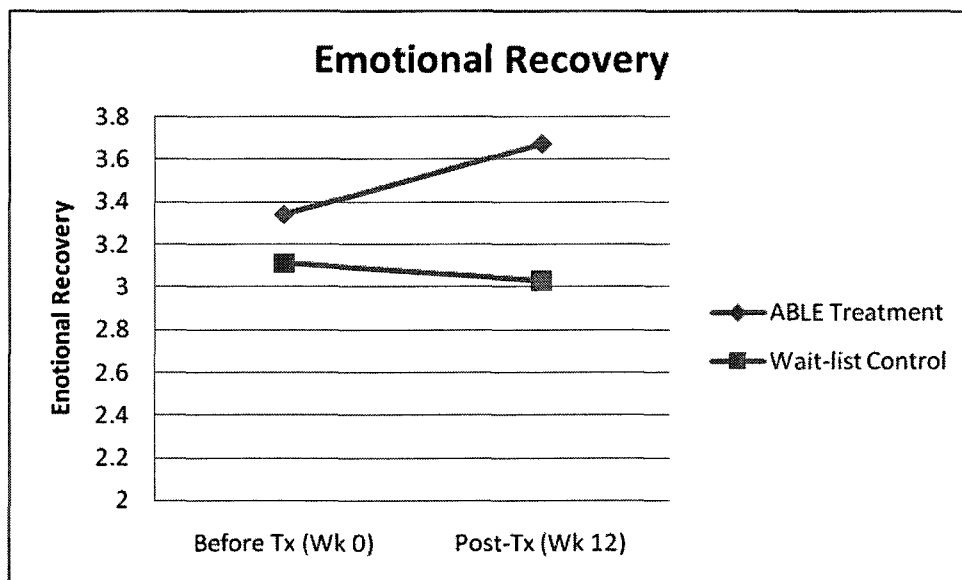


Figure M-1. Emotional recovery before and after the ABLE treatment program for the treatment group and the wait-list control group.

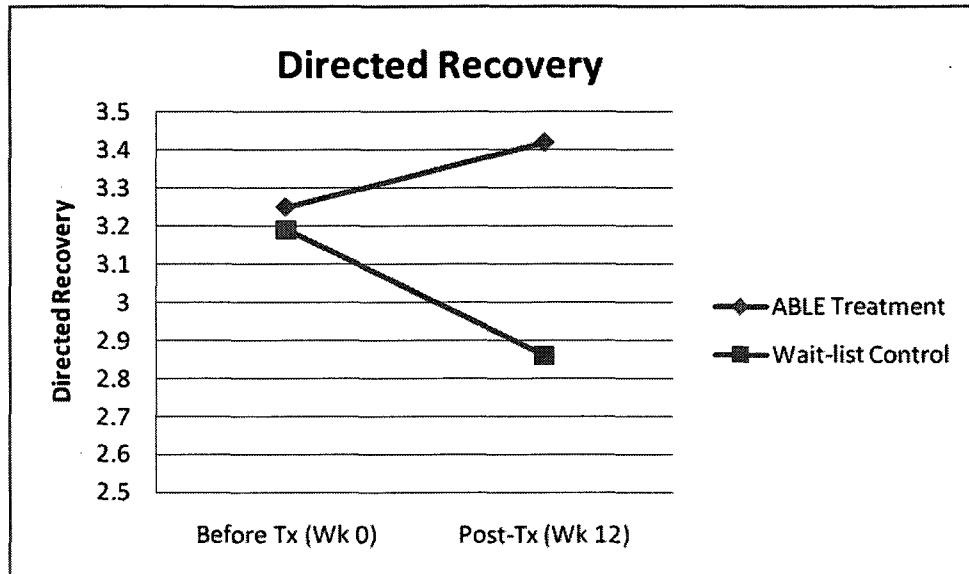


Figure M-2. Directed recovery before and after the ABLE treatment program for the treatment group and the wait-list control group.

Appendix N

To examine the mediating effect of recovery on the relationship between ABLE program participation and strain and motivational outcomes a series of MANOVAs were conducted (Hypothesis 2). Following the procedures recommended by Baron and Kenny (1986) I examined: (1) the impact of the ABLE intervention on the outcomes (see Table N-1); (2) the impact of the ABLE program on recovery (Hypothesis 1; Table M-1); and (3) whether the impact of the ABLE program on the outcomes remained after controlling for the impact of the ABLE program on recovery (see Table N-2).

First, I conducted a 2 x 2 between within MANOVA to assess the interaction between ABLE group (treatment versus wait-list control) and time (Time 1 vs Time 2; see Table N-1) on strain and motivational outcomes. To minimize spurious results, tests for all eight outcomes were conducted in one omnibus MANOVA. This analysis revealed a significant multivariate effect for the Group x Time interaction (Wilks' $\lambda=.86$, $F(7, 91)=2.16$, $p<.05$, $\eta^2=.14$). Individual tests revealed significant Group x Time interactions for only one outcome: strain ($F(1, 98)=8.75$, $p<.01$, $\eta^2=.08$). Although the control group experienced increased strain from Time 1 to Time 2 data collection ($F(1,45)=39.24$, $p<.001$), the ABLE treatment group did not ($F(1,55)=2.4$, $p>.05$; see Figure N-1).

The second MANOVA critical to this analysis was the 2 x 2 between within MANOVA to assess the interaction between ABLE group (treatment versus wait-list control) and time (Time 1 vs Time 2) on higher-order recovery outcomes. This analysis is reported in Appendix L and revealed significant Group x Time interactions for all three higher-order recovery experiences (see Table M-1 and Figures M-1 and M-2).

Table N-1.

Summary of Strain and Motivation Means and Standard Errors for the ABLE Treatment Participants and the Wait-List Control Group at Time 1 and Time 2 (N=102).

	ABLE treatment group				Wait-list control group			
	Time 1		Time 2		Time 1		Time 2	
	M	SE	M	SE	M	SE	M	SE
Strain	1.44	.10	1.55	.06	1.45	.10	1.92	.06
Emotional Exhaustion	3.94	.21	3.36	.23	4.08	.23	3.81	.25
Cynicism	2.73	.21	2.26	.22	3.52	.22	3.42	.23
Vigor	3.24	.16	3.37	.14	2.56	.17	2.64	.15
Dedication	4.02	.15	4.04	.13	3.28	.17	3.18	.14
Absorption	3.96	.16	3.87	.14	3.44	.17	3.50	.15
Positive Mood	3.16	.10	3.31	.10	2.68	.10	2.58	.11

Please note: M = Mean; SE = Standard Error

^a*p* < .05; ^b*p* < .01; ^c*p* < .001

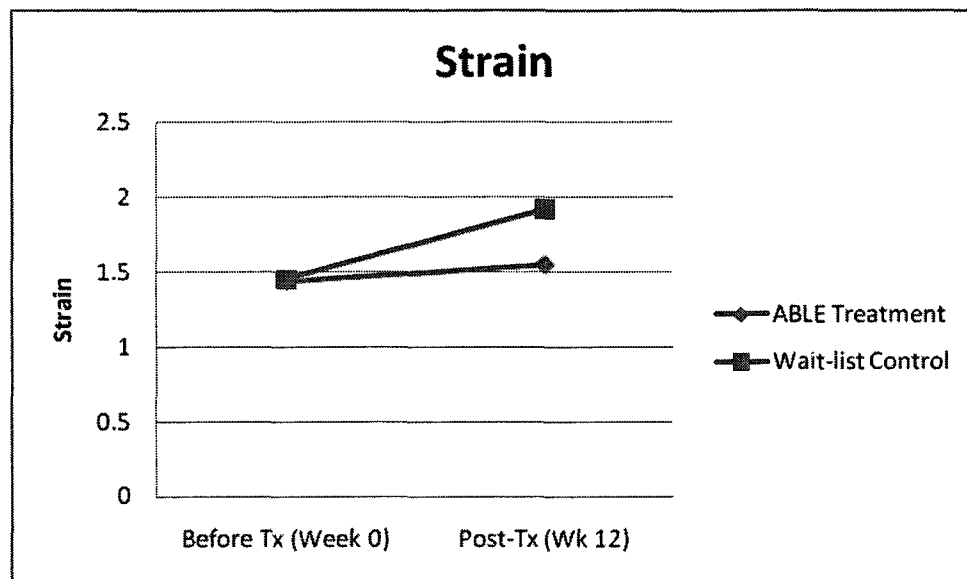


Figure N-1. Perceived strain before and after the ABLÉ treatment program for the treatment group and the wait-list control group.

Therefore, I conducted a third 2 x 2 between within MANOVA to assess the interaction between ABLÉ group (treatment versus wait-list control) and time (Time 1 vs Time 3) on the three higher-order recovery scales and the significant strain outcome. This analysis revealed a significant multivariate effect for the Group x Time interaction (Wilks' $\lambda=.87$, $F(4, 97)=3.65$, $p<.01$, $\eta^2=.14$). To investigate the individual impact of the Group x Time interaction on the individual recovery and strain outcomes, a Roy-Bargmann's stepdown analysis was performed to establish whether the Group x Time interaction would continue to have an effect on strain after controlling for the recovery subscales (see Table N-2). For this analysis, outcomes were entered in order of priority, such that higher priority variables were entered first. The outcome given the highest priority (i.e., psychological detachment) was analyzed with an ANOVA and the following outcomes were analyzed with an ANCOVA, where all outcomes given

higher priority acted as covariates. In this analysis the higher-order recovery scales were entered before the strain outcome enabling the isolation of the effect of the Group x Time interaction on strain, after controlling for the effects of the interaction on recovery subscales. Individual stepdown analyses revealed significant Group x Time interactions for: psychological detachment ($F(1, 100) = 5.25, p < .05, \eta^2 = .05$) and emotional recovery ($F(1, 99) = 6.16, p < .05, \eta^2 = .06$; see Table N-2). After controlling for the higher-order recovery subscales, the Group x Time interaction for strain, was barely significant ($F(1, 97) = 3.95, p = .05, \eta^2 = .04$); and the effect size was reduced (i.e., $\eta^2 = .08$ to $\eta^2 = .04$).

Table N-2.

Summary of Roy-Bargmann's Stepdown Analysis Results Evaluating the Effect of the Group by Time Interaction on Recovery and Strain Outcomes. (N=101)

	Roy Bargmann's Step Down Analysis (F ratio)	Partial Eta Squared
Detachment	$F(1,100) = 5.25^a$	$\eta^2 = .05$
Emotional Recovery	$F(1,99) = 6.16^a$	$\eta^2 = .06$
Directed Recovery	$F(1,98) = 3.33$	$\eta^2 = .03$
Strain	$F(1,97) = 3.95^\dagger$	$\eta^2 = .04$

^a $p < .05$; ^b $p < .01$; ^c $p < .001$; [†] $p = .05$.



SAINT MARY'S
UNIVERSITY SINCE 1802

One University. One World. Yours.

PATRICK POWER
LIBRARY

Department Office

T 902.420.5534

F 902.420.5561

Research Ethics Board Certificate Notice

The Saint Mary's University Research Ethics Board has issued an REB certificate related to this thesis. The certificate number is: 09-133 .

A copy of the certificate is on file at:

Saint Mary's University, Archives
Patrick Power Library
Halifax, NS
B3H 3C3

Email: archives@smu.ca

Phone: 902-420-5508

Fax: 902-420-5561

For more information on the issuing of REB certificates, you can contact the
Research Ethics Board at 902-420-5728/ ethics@smu.ca .