Psychological resilience at work

A labyrinth worth navigating

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Psychologische veerkracht in werk:
Een labyrint waard om je weg in te zoeken
(met een samenvatting in het Nederlands)

Proefschrift

ter verkrijging van de graad van doctor aan de Universiteit Utrecht
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in het openbaar te verdedigen op
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door

Richtje Christina IJntema

geboren op 13 februari 1970
te Sneek

Promotoren:

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Prof. dr. Y.D. Burger

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Preface

'A labyrinth is an ancient symbol that relates to wholeness.
It combines the imagery of the circle and the spiral
into a meandering but purposeful path.
It represents a journey to our own center
and back again out into the world.'[1]

[1] http://www.crystalinks.com/labyrinths.html

PREFACE

The impetus to write a thesis about psychological resilience was the opportunity to develop a resilience-building programme for employees of a large Dutch insurance company. Developing this programme required a thorough understanding of the concept of psychological resilience and how best to enhance it. At that time, I did not realize the challenge that lay ahead of me. As I delved into the subject, I soon discovered that it was not as straightforward as I thought it would be. I often compare the concept of resilience to the concept of leadership: we seem to recognize it in others, however, scientists have a hard time capturing its essence. Despite its 'elusive' nature, I set out to understand psychological resilience and find effective ways to enhance it. This thesis is the result of this journey. Call me a fool or a hero that I persisted to navigate the 'labyrinth' of psychological resilience. To me, it proved to be a labyrinth worth navigating.

Richta IJntema

Chapter 1

Introduction

'Interest in resilience seems to rise in troubled times.'[2]

[2] Masten, 2014, p. 3

1.1. INTRODUCTION

Demanding and stressful situations (*stressors*) are part of everyday work life. Anyone in work will inevitably be exposed to them. Some stressors are job-specific, for example, teachers being exposed to disruptive, noncompliant behaviour of pupils (Stoiber & Gettinger, 2011), law enforcement officers being exposed to violence of any kind (Christopher et al., 2018) and palliative care providers being exposed to the death and loss of their patients (Mehta et al., 2016). Other stressors are more general in nature, such as work overload, interpersonal conflict, organizational change and job insecurity (Schaufeli & Taris, 2014). In order to function effectively, employees need to adapt to the stressors they are exposed to in their jobs. The question of why some people successfully adapt to stressors[3] and others do not is addressed in studies that focus on psychological resilience (Crane, 2017; Fletcher & Sarkar, 2013). In essence, psychological resilience is defined as the dynamic process by which people adapt to a stressor (see Chapter 3 for a more specific definition). This definition implies that resilience should not be regarded as a construct in isolation, but rather as 'a broad, umbrella phenomenon that encompasses a number of elements' (Bonanno, Romero, & Klein, 2015, p. 140). The aim of this thesis is to examine this phenomenon in more detail: how to understand psychological resilience[4] and how to effectively enhance it in employees.

Developmental psychologists were the first to study psychological resilience. They were intrigued by the question of what enabled certain children to become well-adjusted adults despite growing up under adverse circumstances, such as poverty and chronic family problems (Werner, 2012). Contrary to what they expected, this was not the result of some *magic power*: a rare or extraordinary personality trait only a few people possess (Masten, 2014). Rather, they discovered that adaptation was the result of *ordinary magic*: a commonplace phenomenon available to everyone (Aburn, Gott, & Hoare, 2016; Masten, 2014). To date, not only are developmental psychologists interested in the processes by which people adapt to stressors, but psychologists in other fields as well, such as clinical psychologists studying the resilience of patients and occupational (health) psychologists studying the resilience of employees.

In this thesis, we focus on resilience in an *occupational* context because we were given the opportunity to develop a resilience-building programme for office workers of a

[3] We do not use the term 'adversity', that is often used in the resilience literature because it is associated with events that lead to negative outcomes. Instead, we prefer to use the term 'stressor' because it is associated with demanding events that may result in both negative and positive/'resilient' outcomes (Fletcher & Sarkar, 2013).

[4] As this thesis sits within the field of psychological resilience, when we use the term 'resilience', we mean 'psychological resilience'.

large Dutch insurance company. Three developments have contributed to an emerging interest in psychological resilience in the occupational context: 1) the changing world of work (Kossek & Perrigino, 2016) which is increasingly becoming more volatile, uncertain, complex and ambiguous (VUCA; Kinsinger & Walch, 2012); 2) the 2008 global financial crisis which affected many employees (Bardoel, Pettit, De Cieri, & McMillan, 2014); and 3) the COVID-19 crisis which is currently afflicting the world. Employees need to respond and adapt to these developments. Given these developments, psychological resilience is an intriguing, promising and appealing concept. It is intriguing because of stories about particular people (*heroes*) who have been able to overcome even the most stressful life events (Masten, 2014). Moreover, the concept of resilience is promising because it conveys the message that people need not necessarily fall victim to stressful events at work, but could (learn to) adapt to new situations they are facing (Zautra, Hall, & Murray, 2010; Masten, 2014). Finally, resilience is appealing because it implies a positive, strength-based approach, rather than a deficit-based approach (Windle, 2011). However intriguing, promising and appealing, anyone who (is about to) dive(s) into the subject of psychological resilience, must be aware that the scientific literature on this topic is fragmented and that the concept is regarded as elusive (Kaplan, 2013).

1.1.1. What is psychological resilience?

The first aim of this thesis is to gain a comprehensive understanding of psychological resilience in the work context. In the contemporary work context, the notion of resilience is increasingly popular. In the literature, it is presented as 'an idea whose time has come' (Cooper, Liu, & Tarba, 2014, p. 2466), 'a hot topic among HR professionals' (Bardoel et al., 2014, p. 279) and 'a quasi-universal answer to problems of security and governance' (Aradau, 2014, p. 73). However, the term is often misused to label a person. To illustrate, an employee who successfully performs under pressure is unjustly considered to be 'more resilient' than an employee who breaks under similar pressure. In such an attribute-like understanding of resilience, three important issues are overlooked, namely that resilience is defined by: 1) a stressful event; 2) a positive outcome after dealing with that event; and 3) both individual and environmental factors influencing this outcome (Fletcher & Sarkar, 2013). In our example, the 'resilient' employee may receive family support to work late at night, while the 'non-resilient' employee has to take care of his aging parents in the evenings. Even though both employees face a similar situation at work, they face different situations at home. This example illustrates that resilience is more than a mere personal attribute.

The term 'resilience' originates from the Latin verb *resilire* which means 'to jump back' (Aburn et al., 2016) or 'rebound' (McAslan, 2010). *Psychological* was added to clarify that resilience is studied at the mental level of human functioning, rather than at the

physical level (Tusaie & Dyer, 2004). In its infancy, psychological resilience was conceptualized as an extraordinary personality trait people possessed, also called *invulnerability* or *invincibility* (Masten, 2014; Van Breda, 2018). However, most researchers have moved away from this trait-based perspective as research has shown that resilience is malleable (Bryan, O'Shea, & MacIntyre, 2019; Kossek & Perrigino, 2016). Thereafter, resilience has been considered from three other perspectives: an outcome-based, a resource-based and a process-based perspective (Fisher, Ragsdale, & Fisher, 2018; Infurna & Luthar, 2018).

The outcome-based perspective on resilience suggests that it represents some type of positive adaptation to one or more stressors (see Figure 1.1). Several types of adaptation have been distinguished so far (Bryan et al., 2019; Fisher et al., 2018): 1) *sustainability*, which implies that people maintain relatively stable and healthy levels of functioning after being exposed to a stressor (Bonanno, 2004); 2) *recovery*, which implies that people are negatively affected by a stressor, but are able to bounce back (rapidly) to their pre-stressor level of functioning (Zautra, Arewasikporn, & Davis, 2010); and 3) *growth*, which implies that people function better than before after being exposed to a stressor (Ayed, Toner, & Priebe, 2019; Tedeschi & Calhoun, 2004). However, resilience, seen as some kind of adaptation, is equivalent to concepts such as adjustment and recovery (Masten, 2014; Van Breda, 2018). In addition, measurement scales based on this perspective tend to focus exclusively on the outcome which do not include a stressor as a necessary condition for resilience (Fletcher & Sarkar, 2013; Fisher et al., 2018; see Figure 1.1). Therefore, this outcome-based perspective is now criticized. Because of this limitation, most researchers have moved away from conceptualizing psychological resilience as a mere outcome variable (e.g. Britt, Shen, Sinclair, Grossman, & Klieger, 2016; Fisher et al., 2018).

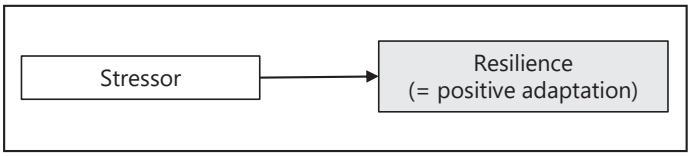

Figure 1.1. *Outcome-based perspective on resilience*

The resource-based perspective on resilience suggests that resilience represents a constellation of personal and/or environmental factors that enable people to adapt to the circumstances they encounter (see Figure 1.2), either by protecting them against harm or by promoting wellbeing (Fletcher & Sarkar, 2013). These resilience resources are also called 'protective factors', 'promoting factors' or 'adaptive factors' (Davydov, Stewart, Ritchie, & Chaudieu, 2010; Fletcher & Sarkar, 2013; Masten, 2014). Researchers became interested in resilience resources because they could not find a direct relationship between

stressor exposure and adaptation. They hypothesized therefore that resilience resources may moderate this relationship (Masten, 2014). In search of specific resilience resources, researchers focused first and foremost on *personal* resources (also called 'abilities' or 'capacities'; Van Breda, 2018), for example, self-efficacy, optimism, motivation, hope and perspective (Ayed et al., 2019; Bryan et al., 2019). Since personal resources alone could not fully explain the relationship between stressor exposure and adaptation, *environmental* resources have been investigated as well, most notably social resources, such as support from family, friends and colleagues (Ayed et al., 2019; Bryan et al., 2019; Chmitorz et al., 2018; Windle 2011). However, personal and environmental resources, such as self-efficacy and social support, are quite similar to factors that are associated with good health and development in general and are not unique to resilience (Fisher et al., 2018; Masten, 2014). In addition, measurement scales based on this perspective tend to focus exclusively on measuring resources which do not include a stressor as a necessary condition for resilience (Fletcher & Sarkar, 2013; Fisher et al., 2018; see Figure 1.2). Therefore, similar to the outcome-based perspective, the resource-based perspective is criticized. Because of this limitation, most researchers have moved away from conceptualizing psychological resilience as a personal and/or environmental resource (e.g. Britt et al., 2016; Fisher et al., 2018; Kossek & Perrigino, 2016).

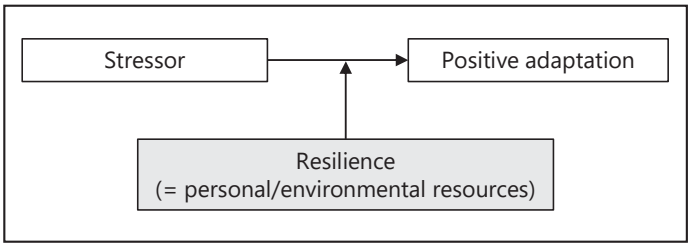

Figure 1.2. *Resource-based perspective on resilience*

Finally, the process-based perspective suggests that resilience represents a dynamic process by which people adapt to a stressor. This process unfolds over time in the context of specific person-environment interactions (Britt et al., 2016; Fletcher & Sarkar, 2013; Fisher et al., 2018; Kossek & Perrigino, 2016; Masten, 2014). An advantage of viewing resilience as a dynamic process is that the outcome-based and resource-based perspectives on resilience can be incorporated (Bonanno et al., 2015; Kossek & Perrigino, 2016; Van Breda, 2018; see Figure 1.3). In this thesis, we argue that this process-based perspective on resilience is currently the dominant perspective in the work context (see Chapter 2). Examples of process-based resilience models developed pertinent to the work context are the general conceptual model of resiliency (McLarnon & Rothstein, 2013), the

framework for understanding employees' resilience to workplace stressors (Cooper et al, 2013), the integrative model of resilience for employees (Britt et al., 2016), the integrated occupational resilience framework (Kossek & Perrigino, 2016) and resilience in a temporal context (Fisher et al., 2018). These models view resilience as a broad phenomenon encompassing a number of temporally related elements (Bonanno et al., 2015) that explain how employees adapt to stressors. However, a limitation of these models is that they do not explain how employees arrive at *different* outcomes after being exposed to a stressor, such as the three aforementioned types of positive adaptation: sustainability, recovery and growth. Therefore, the first aim of this thesis is to gain a more comprehensive understanding of the dynamic process of psychological resilience by explaining how employees adapt differently to stressors.

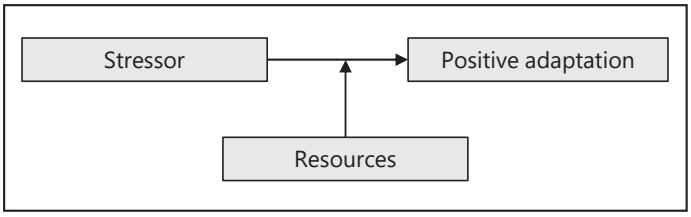

Figure 1.3. *A basic process model of resilience*

1.1.2. Psychological resilience-building programmes

The second aim of this thesis is to gain a comprehensive understanding of how to effectively enhance the dynamic process of psychological resilience in an occupational context. More specifically, we investigate what a process-based psychological resilience-building programme for employees entails, how effective such programmes are and which ingredients make them effective. To accomplish this aim, we first defined what constitutes a resilience-building programme by formulating criteria that a programme must meet to be regarded as a work-related process-based psychological resilience-building programme (see Chapter 2). Secondly, we conducted a systematic literature review regarding the effectiveness of resilience-building programmes in the work context to examine to what extent existing programmes are effective and which ingredients make them effective (see Chapter 4). We specifically looked at *process-based* resilience-building programmes and distinguished these from programmes based on a non-process-based understanding of resilience (e.g. outcome- or resource-based). Thirdly, in collaboration with a Dutch consultancy firm, we developed a programme, called *ResilienceWise* (in Dutch: *VeerkrachtWijzer*). This programme meets the criteria for process-based resilience-building programmes (see Chapter 2). We investigated how effective this programme was in enhancing resilience in the short- and long-term and examined which ingredients made

this programme effective (see Chapter 5). Finally, we replicated and improved this effectiveness study (see Chapter 6).

1.2. AIMS AND RESEARCH QUESTIONS

The first aim of this thesis is to gain a comprehensive understanding of psychological resilience as a dynamic process by explaining how employees adapt differently to job-related stressors. To achieve this first aim, we seek to answer the following two research questions:

1. What is known about psychological resilience as a dynamic process: how is it defined, measured and enhanced?
2. How do people arrive at different outcomes after being exposed to a job-related stressor?

The second aim of this thesis is to gain a comprehensive understanding of how to effectively enhance the dynamic process of psychological resilience in an occupational context. To achieve this second aim, we seek to answer the following three research questions:

3. Which criteria must a programme meet to be regarded as a work-related process-based psychological resilience-building programme?
4. Are current programmes that meet these criteria (see Research Question 3), including the *ResilienceWise* programme, effective in enhancing psychological resilience, both in the short-term as well as in the long-term?
5. Which ingredients make these resilience-building programmes effective?

We elaborate on these five research questions throughout the following five chapters of this thesis, providing an answer to them in the final chapter.

1.3. OUTLINE OF THIS THESIS

Chapter 2. Reviewing the labyrinth of psychological resilience: Establishing criteria for resilience-building programmes

This chapter first answers the question of what is known about psychological resilience as a dynamic process: how it is defined, measured and enhanced (Research Question 1). To answer this question, we conducted a systematic literature review. This review synthesizes the evidence about the definition, measurement and enhancement of psychological resilience. It includes twenty-one studies and three books published between 2009-2018. This recent time period allowed us to study the current, preferred understanding of

resilience which we argue to be a process-based understanding. Secondly, this chapter answers the question as to which criteria a programme must meet to be regarded as a work-related process-based psychological resilience-building programme (Research Question 3). To answer this question, we extracted a set of criteria from our literature review to guide the development of work-related process-based psychological resilience-building programmes. We argue that these criteria are necessary because the existing peer-reviewed scientific literature provides little, if any information on what a process-based resilience-building programme should entail.

Chapter 3. Resilience mechanisms at work: The Psychological Immunity-Psychological Elasticity (PI-PE) model of psychological resilience

In this chapter, we answer the question of how employees adapt differently to job-related stressors (Research Question 2). For this purpose, we developed a new dynamic process model of psychological resilience, the Psychological Immunity-Psychological Elasticity (PI-PE) model. Successively, we describe how we derived this model from the existing literature on resilience, we clarify its different parts and we explain how the model provides an answer to our second research question. Taken as a whole, the PI-PE model presents a comprehensive framework for understanding 1) how the process of psychological resilience works differently for different people and 2) how to support individuals in their process towards successfully adapting to job-related stressors (see Research Question 4).

Chapter 4. Psychological resilience-building programmes at work: A systematic review and classification

In this chapter, we answer two questions. First, how effective are current psychological resilience-building programmes in enhancing psychological resilience in the work context (Research Question 4)? Secondly, which ingredients make these programmes effective (Research Question 5)? For this purpose, we conducted a systematic literature review regarding the effectiveness of resilience-building programmes in the work context. Using the criteria for resilience-building programmes formulated in chapter 2, we divided the included programmes into process- versus non-process-based programmes. We investigate how effective each category of programmes is in enhancing resilience. This review is the first to classify programmes into these categories. This classification contributes to a better understanding of the distinctive effect of programmes based on the current process-based perspective of resilience, compared to programmes based on more outdated perspectives.

Chapter 5. Building resilience resources during organizational change: A longitudinal quasi-experimental field study

In this chapter, we investigate the effectiveness of a new psychological resilience-building programme, called *ResilienceWise*. This resource-based, blended coaching programme meets the criteria for process-based resilience-building programmes (see Chapter 2). Therefore, this study contributes to the empirical evidence regarding the effectiveness of such programmes in the work context (Research Question 4). In a quasi-experimental field study using a 2 (experimental group; no-programme control group) x 3 (pre-test; post-test; follow-up) design, we first investigate to what extent the ResilienceWise programme enhances eight resilience resources (i.e. self-efficacy, optimism, purpose in life, environmental mastery, positive affect, positive relationships and mindfulness) and three indicators of positive adaptation (i.e. task performance, general heath and recovery from stress) in health care office workers facing organizational change. Secondly, we investigate whether the strength of the relationship between the coach and client in the ResilienceWise programme could explain programme effectiveness (Research Question 5). In the literature regarding the effectiveness of coaching programmes, there is growing evidence that relationship strength is a key factor when it comes to explaining coaching outcomes (De Haan, Grant, Burger, & Eriksson, 2016; Graßmann, Schölmerich, & Schermuly, 2020; Lai & McDowall, 2014). However, in the literature regarding the effectiveness of *resilience* coaching programmes, this factor has not been included before. Hence, the added value of this chapter is that it bridges a gap between the literature regarding the effectiveness of resilience-building programmes and the literature regarding the effectiveness of coaching programmes.

Chapter 6. The effectiveness of the psychological resilience-building programme 'ResilienceWise': A replication and revision

In this chapter, we describe a replication and further improvement of the study presented in chapter 5, concerning the effectiveness of the ResilienceWise programme. The aim of this study is to confirm the results of the previous study and to generalize the obtained results to a different sample of employees, also facing organizational change. Confirming previous results is important in empirical sciences (Schmidt, 2009). However, conducting replication studies is not common practice when it comes to research regarding the effectiveness of resilience-building programmes in the work context. The current study is one of the first in this field. This replication and improvement study helps us to determine with more certainty to what extent the ResilienceWise programme is effective (Research Question 4) and which ingredients make this programme effective (Research Question 5).

Chapter 7. General discussion

In this final chapter, we answer our five research questions, discuss the main findings, the strengths and limitations of our research as well as the implications of our findings for future research and practice.

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Chapter 2

Reviewing the labyrinth of psychological resilience: Establishing criteria for resilience-building programmes

'Resilience is not a do-it-yourself endeavour.'[5]

[5] Ungar, 2019, p. 14

Reviewing the labyrinth of psychological resilience: Establishing criteria for resilience-building programmes

Abstract

There is a growing interest in developing resilience-building programmes in the work context. However, the resilience literature to date provides no clear answer as to what constitutes such a resilience-building programme. The aim of this chapter is to shed light on this question and present a set of criteria for resilience-building programmes. We developed criteria by systematically reviewing studies that synthesized the evidence about the definition, conceptualization, measurement and enhancement of psychological resilience. A literature search in peer-review journals published between 2009 and 2018 using PsycINFO resulted in 286 hits. Twenty-one studies met our inclusion criteria. In addition, we consulted three handbooks on resilience. The result of our review is a checklist containing twelve criteria for resilience-building programmes which serves to improve programme consistency and quality. These criteria address the necessity to: specify which working population is in need of psychological resilience; cite which definition is being used; depict and explain the process that people go through in order to adapt to a stressor; describe how resilience will be measured and enhanced as a dynamic process, as well as identify which type of positive adaptation – to which stressor in which work context and when – is involved; and to clarify the starting point and purpose of the work. These criteria can be regarded as a valuable navigation tool in the complex field of resilience. Programme developers can use them to optimize the content of resilience-building programmes and to ensure that relevant information is reported. Reviewers of resilience-building programmes can use them to scrutinize, evaluate and compare programmes. The checklist therefore could become an indispensable tool for both researchers and practitioners to improve designing, describing and reviewing resilience-building programmes at work.

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2.1. INTRODUCTION

When practitioners are asked to provide a resilience-building programme, they need to inquire about the 'resilience *of what*?' (Martin-Breen & Anderies, 2011). In an organizational context, several answers are possible: the resilience of employees, teams, the company itself or even the business sector it operates in. When it comes to employee resilience, a further distinction can be made between individual resilience and psychological resilience. Even though these terms are often used interchangeably (Cooper, Flint-Taylor, & Pearn, 2013), we consider them to be distinct. In this chapter, we focus on psychological resilience which emphasizes resilience in psychological functioning: the interplay among behaviour, cognition and affect at a certain time in a certain context. In contrast to individual resilience, psychological resilience does not include biological types of resilience (Tusaie & Dyer, 2004), such as physical resilience (Whitson et al., 2016) and physiological resilience (Hicks & Miller, 2011). Hence, when we use the terms *resilience* or *resilience-building programme*, we mean, respectively, *psychological resilience* and *psychological resilience-building programme*.

When we take a closer look at existing resilience-building programmes evaluated in the work context, we find something negligent about them: several are called 'resilience programmes' without providing a definition of resilience (e.g. Arnetz, Nevedal, Lumley, Backman, & Lublin, 2009; Carr et al., 2013; Chesak et al., 2015; Jennings, Frank, Snowberg, Coccia, & Greenberg, 2013; Liossis, Shochet, Millear, & Biggs, 2009; Millear, Liossis, Shochet, Biggs, & Donald, 2008; Sood, Sharma, Schroeder, & Gorman, 2014) or without measuring resilience before or after the programme (e.g. Abbott, Klein, Hamilton, & Rosenthal, 2009; Arnetz et al., 2009; Jennings et al., 2013; Liossis et al., 2009; Lynch et al., 2016; McCraty & Atkinson, 2012; Millear et al., 2008). This lack of conceptual precision and operationalization of resilience is detrimental to the quality of resilience-building programmes in the work context (Vanhove, Herian, Perez, Harms, & Lester, 2016) and the research about them. It also raises the question of what constitutes a resilience-building programme.

The scientific literature provides little information about what constitutes a resilience-building programme (Calitz, 2018; Leppin et al., 2014; Vanhove et al., 2016). It has been defined as a programme 'that systematically seeks to enhance resilience in individuals or groups' (Leppin et al., 2014, p. 2) and as a programme 'that targets any of the factors that research has shown to improve resilience and healthy responses to stress and provide a means for helping individuals to incorporate resilience factors into their daily lives' (Meredith et al., 2011, p. 8). These definitions imply that a resilience-building programme should aim to enhance resilience and offer the means to accomplish this goal. Both aspects have been used as criteria to select programmes for inclusion in systematic

reviews regarding the effectiveness of resilience-building programmes. However, each has been used in a different context: the aim to enhance resilience in a general adult context (Joyce et al., 2018; Leppin et al., 2014; Macedo et al., 2014); and the means to enhance resilience in a work context (Macedo et al., 2014; Robertson, Cooper, Sarkar, & Curran, 2015; Vanhove et al., 2016). Except for Leppin and colleagues (2014), none of these existing systematic reviews offers a definition of resilience-building programmes. We may conclude that the scientific literature on resilience-building programmes provides no agreed-upon definition or set of criteria to reliably determine whether a programme constitutes a practical resilience-building effort and therefore deserves to be called a 'resilience-building programme' (Vanhove et al., 2016). Without these criteria, any programme could be promoted as a resilience-building programme, but it would remain unclear what to expect of it. Therefore, to advance research and practice on resilience-building programmes in the work context, the aim of this chapter is to establish a set of criteria for programmes that build psychological resilience.

We set out to formulate such criteria, beginning with the goal of developing a thorough understanding of the concept of psychological resilience. Therefore, we conducted an extensive literature review. We excluded resilience-related concepts such as hardiness (Kobasa, 1979; Maddi, 2002) and mental toughness (Clough, Earle, & Sewell, 2002; Jones, Hanton, & Connaughton, 2002). We reviewed how resilience has been defined, conceptualized, measured and enhanced in the literature with a focus on psychological resilience in the work context. In this chapter, we explain how we identified the criteria for resilience-building programmes with this literature review. The result of our review is a checklist containing twelve criteria that resilience-building programmes should provide information on when it comes to the content of such programmes (see Table 2.1).

In our literature review, we were not searching for criteria to improve research on resilience-building programmes as such. For that purpose, guidelines have been developed (Chmitorz et al., 2018; Robertson et al., 2015). Neither were we searching for criteria on how to build a theory- and evidence-based programme nor how to describe programmes. For these purposes, handbooks and guidelines are available (e.g. Bartholomew Eldredge et al., 2016; Hoffmann et al., 2014). However, we did search for criteria to assess the resilience content of a programme. In the fragmented field of psychological resilience, these criteria are a valuable tool as they summarize the relevant topics to address in a resilience-building programme. In the design of programmes, the criteria can be used to optimize the programme content and to ensure that all relevant information is provided when it comes to resilience. In analysing or evaluating programmes, the criteria can be used to identify missing information and inconsistencies in the description of programmes. The criteria for resilience-building programmes thus serve the following purposes: to optimize, scrutinize, evaluate and compare programmes.

Table 2.1. *Checklist containing twelve criteria for psychological resilience-building programmes*

		Criteria	Examples/remarks
INTRA-PROGRAMME CONSISTENCY*	1.	The topic of interest is **psychological resilience**.	Psychological resilience does not include biological types of resilience.
	2.	The **working population** for whom the programme is intended is specified.	The population can be general (e.g. employees), multiple (e.g. police and military), specific (e.g. policemen) or a subpopulation (e.g. police recruits).
	3.	The work **context** in which the programme is provided is specified.	E.g. healthcare, accountancy, law enforcement, education
	4.	Resilience is **defined**, incorporating the terms 'dynamic process', 'stressor' and 'positive adaptation'.	An example definition is 'the dynamic process representing positive adaptation to a stressor'.
	5.	The (characteristics of the) **stressor** that triggers the need for resilience is (are) specified.	E.g. unemployment, change, bankruptcy; characteristics concern a single or multiple event(s), its nature, intensity, duration, predictability and frequency
	6.	An explanation is provided for how **positive adaptation** is understood.	E.g. recovery, sustainability, growth
	7.	The **process** by which people adapt to a stressor is depicted and explained.	Basic elements of a process model are: pre-stressor adjustment, stressor, mechanisms, resources, outcomes.
	8.	The **timing** of the programme is explained in relation to the stressor.	Before, during or after the stressor
	9.	A general and specific programme **aim** are provided. The general aim is to enhance resilience. The specific aim concerns which (malleable) element(s) in the resilience process is (are) targeted.	E.g. to enhance pre-stressor adjustment; (which) resilience mechanisms; (which) resources; to facilitate positive adaptation; to manage the intensity and duration of the stressor
	10.	An explanation is provided for how resilience is **measured**: a. which **element**(**s**) in the process of resilience is (are) measured and b. at which **time points** (so that change in resilience can be observed).	Time points can be determined in relation to the timescale of the programme and of the stressor.
	11.	It is specified whether there is a baseline level (of a specific resilience element) at which people are **eligible** for the programme.	
	12.	An explanation is provided for how the programme **enhances** resilience: a. by which **approach**, b. which **mode of delivery**, and c. in which time period (**duration**)	e.g. cognitive-behavioural, scenario-, mindfulness-, skills-based e.g. individual, group, electronic

* Intra-programme consistency: the definition, process model and measurement of resilience are consistent with both the programme target and approach.

2.2. METHOD

To identify relevant studies, we conducted a literature search using the PsycINFO electronic database. We restricted our search to 1) literature reviews or meta-analyses, 2) about psychological resilience, 3) that were published between 2009 and 2018. We used two sets of search terms in title words: resilien* (which covers 'resilience,' 'resiliency' and 'resilient') in combination with 'review' or 'meta-analysis'. Our search resulted in 286 hits. Studies were included if they met the following inclusion criteria: 1) the review focused on the definition, conceptualization, measurement or enhancement of resilience; 2) involved a general adult or working population; 3) was written in the English language; and 4) had been published in peer-review journals. Studies were excluded if 1) they were not literature reviews, such as book reviews or single studies; 2) they focused on other types of resilience than psychological resilience, such as community, social, family, team, organizational or disaster resilience; 3) their main focus was not on resilience but rather on resilience-related topics, such as trauma or wellbeing; 4) they focused on a non-adult population (e.g. children, youth) or a specific adult population (e.g. immigrants, students, patients, parents); 5) they focused on the way resilience was investigated rather than the way it was defined, conceptualized, measured or enhanced; or 6) they addressed the relationship between resilience and other factors (e.g. personality, coping, shift work).

Our search found 286 studies. We analysed these using Rayyan, a web application for systematic reviews (Ouzzani, Hammady, Fedorowicz, & Elmagarmid, 2016). The first author conducted title and abstract screening. In ambiguous cases, full-text papers were read (n = 23) and discussed with co-authors. Fourteen reviews met all inclusion criteria. We additionally included three reviews that were known to us, but were not found by PsycINFO (Bryan, O'Shea, & MacIntyre, 2019; Fisher, Ragsdale, & Fisher, 2018; Joyce et al., 2018) and four reviews that we found through manually searching the reference lists of the included reviews (Britt, Shen, Sinclair, Grossman, & Klieger, 2016; Davydov, Stewart, Ritchie, & Chaudieu, 2010; Leppin et al., 2014; Windle, Bennett, & Noyes, 2011). Lastly, we included three handbooks on resilience to get a broader picture: a developmental perspective (Masten, 2014), an adult perspective (Reich, Zautra, & Hall, 2010) and an occupational perspective (Cooper et al., 2013). Table 2.2 gives an overview of the total of 21 included reviews and three handbooks. As can be seen in Table 2.2, eleven reviews mainly address the definition and conceptualization of resilience, four address the measurement of resilience and six address the enhancement of resilience through resilience-building programmes. In three sections, we present the results of our review and how these inform our checklist. Before doing so, we first devote a section to the terminology used for psychological resilience because we encountered several related terms in our literature search with implications for our checklist.

Table 2.2. *Overview of the included studies and books*

Topic	Authors
Definition and conceptualization of resilience	Aburn, Gott, & Hoare (2016) Ayed, Toner, & Priebe (2019) Britt, Shen, Sinclair, Grossman, & Klieger (2016) Bryan, O'Shea, & MacIntyre (2019) Davydov, Stewart, Ritchie, & Chaudieu (2010) Fisher, Ragsdale, & Fisher (2018) Fletcher & Sarkar (2013) Infurna & Luthar (2018) Kossek & Perrigino (2016) Van Breda (2018) Windle (2011)
Measurement of resilience	Cosco, Kaushal, Richards, & Stafford (2017) Pangallo, Zibarras, Lewis, & Flaxman (2015) Smith-Osborne & Whitehill Bolton (2013) Windle, Bennett, & Noyes (2011)
Enhancement of resilience	Chmitorz et al. (2018) Joyce et al. (2018) Leppin et al. (2014) Macedo et al. (2014) Robertson, Cooper, Sarkar, & Curran (2015) Vanhove, Herian, Perez, Harms, & Lester (2016)
Books on resilience	Cooper, Flint-Tayler, & Pearn (2013) Masten (2014) Reich, Zautra, & Hall (2010)

2.3. TERMINOLOGY FOR PSYCHOLOGICAL RESILIENCE

As mentioned in the introduction, this chapter is restricted to psychological resilience. However, in our literature search, we discovered that it is not common practice to use the term *psychological resilience* to refer to this type of resilience. We encountered several related terms such as *individual resilience* (Cooper et al., 2013), *personal resilience* (Rice & Liu, 2016), *adult resilience* (Zautra, Hall, & Murray, 2010), *mental resilience* (Davydov et al., 2010), *cognitive resilience* and *emotional resilience* (Kossek & Perrigino, 2016). These terms show that there is a lack of consistency in the terminology used for psychological resilience. It is not always clear why authors prefer one term over the other and whether these terms are distinct from each other or not. For more consistency in programmes that build psychological resilience, we recommend the term *psychological resilience* be used to refer to the topic of interest. By restricting ourselves to this type of resilience, we established our first criterion for psychological resilience-building programmes (see Table

2.1). As can be seen in Table 2.1, this criterion requires that the topic of interest be psychological resilience.

In addition to terms referring to the type of resilience, we also found terms referring to the work context in which resilience occurs and terms referring to the working population: for example, *workplace resilience* (McLarnon & Rothstein, 2013; Robertson et al., 2015), *occupational resilience* (Kossek & Perrigino, 2016), *career resilience* (Mishra & McDonald, 2017), *employee resilience* (Britt et al., 2016), *military resilience* (Britt, Sinclair, & McFadden, 2013), *physician resilience* (Fox et al., 2018) and *teacher resilience* (Beltman, Mansfield, & Price, 2011). Specifying the work context and working population separately from the type of resilience – for example, managers in need of psychological resilience in an educational setting – is important because research has shown that resilience differs per occupation (Infurna & Luthar, 2018; Kossek & Perrigino, 2016) and the working population could be a general working population (e.g. employees), multiple working populations (e.g. police and military), a specific working population (e.g. policemen) or a subgroup within a working population (e.g. police recruits; Leppin et al., 2014). In our checklist, we have included specifying the working population and the work context as, respectively, the second and third criteria that need to be met in a resilience-building programme (see Table 2.1).

2.4. DEFINITION AND CONCEPTUALIZATION OF PSYCHOLOGICAL RESILIENCE

Eleven reviews synthesized the evidence about the definition of resilience (see Table 2.2). All reported in some way or another that resilience has been defined in various ways and that there is no agreed-upon definition of it (for an overview of definitions, see Aburn, Gott, & Hoare, 2016). Therefore, one cannot assume upfront that potential participants of resilience-building programmes know what these programmes are about. Providing a definition of the concept of interest is minimally required 'to ensure that we talk or write in harmony with each other' (Van Breda, 2018, p. 2). Table 2.3 shows how resilience was defined in seven of the eleven reviews that presented their own definition. As can be seen from Table 2.3, these definitions have in common that they 1) regard resilience as a dynamic process; 2) include exposure to a stressor as the first critical condition for resilience; and 3) consider the outcome of positive adaptation despite this stressor as the second critical condition for resilience. Fisher and colleagues (2018) proposed that 'regardless of the specific wording, any definition of resilience should incorporate the fundamental themes of a stressor, positive adaption and a process-based conceptualization' (p. 10). In our checklist, we therefore have included, as the fourth criterion for resilience-building programmes, the requirement that a definition of resilience

be provided that incorporates the terms 'dynamic process', 'stressor' and 'positive adaptation' (see Table 2.1). This implies that resilience can be defined, in essence, as a dynamic process representing positive adaptation to a stressor (see Infurna & Luthar, 2018; Luthar, Cicchetti, & Becker, 2000). Below we discuss these three terms in more detail.

Table 2.3. *Definitions of psychological resilience*

Author(s)	Definition of resilience
Bryan et al. (2019)	'A dynamic process encompassing the capacity to maintain regular functioning through diverse challenges or to rebound through the use of facilitative resources.' (p. 8)
Fisher et al. (2018)	'The process by which individuals are able to positively adapt to substantial difficulties, adversity, or hardship.' (p. 10)
Fletcher & Sarkar (2013)	'The role of mental processes and behavior in promoting personal assets and protecting an individual from the potential negative effect of stressors.' (p. 16)
Infurna & Luthar (2018)	A trajectory of 'stable, healthy psychological functioning.' (p. 45)
Kossek & Perrigino (2016)	'The synthesis of an individual's traits, capacities or coping strategies, and processes for positively adapting to adversity and risk in ones' occupational and organizational contexts.' (p. 764)
Van Breda (2018)	'The multilevel processes that systems engage in to obtain better-than-expected outcomes in the face or wake of adversity.' (p. 4)
Windle (2011)	'The process of effectively negotiating, adapting to, or managing significant sources of stress or trauma. Assets and resources within the individual, their life and environment facilitate this capacity for adaptation and "bouncing back" in the face of adversity. Across the life course, the experience of resilience will vary.' (p. 152)

2.4.1. Stressor

The term *stressor* should be included in any definition of resilience because it is the antecedent needed to trigger the process of psychological resilience (Ayed, Toner, & Priebe, 2019; Fisher et al., 2018; Windle, 2011). The included reviews showed that a stressor comes in many shapes and sizes. First, with respect to the terms used, we found a number of related terms, such as *challenges* (Aburn et al., 2016; Bryan et al., 2019), *difficulties*, *hardship* (Fisher et al., 2018), *adversity* (Van Breda, 2018), *risk* (Ayed et al., 2019), *stress triggers* (Kossek & Perrigino, 2016) and *setbacks* (Cooper et al., 2013). Secondly, with respect to the definitions used, we found two opposing views: on the one hand, there was the idea that a stressor could be any difficult, stressful event or circumstance at work (e.g. work overload, job ambiguity; Bryan et al., 2019), which is similar to Seyles definition of a stressor (see Lazarus & Folkman, 1984); on the other hand, there was the idea that a stressor concerns only significant adverse events at a high intensity or for a long duration (e.g. sexual harassment, abusive supervision; Britt et al., 2016).

Stressful events differ in their nature, intensity, duration, predictability and frequency (Britt et al., 2016; Fisher et al., 2018). For example, the stressor could be a single event (e.g. workplace violence) or multiple events (e.g. job demands; Fisher et al., 2018); challenging (time pressure, skill demands) or hindering (e.g. role ambiguity, role conflict; Infurna & Luthar, 2018); specific to job context (e.g. military combat), related to job context in general (e.g. bankruptcy) or not related to the job (e.g. divorce; Kossek & Perrigino, 2016); mild (e.g. daily hassles at work) or strong (e.g. serious job accident; Fletcher & Sarkar, 2013); time-bound/acute (e.g. job rejection) or ongoing/chronic (e.g. unemployment; Fisher et al., 2018); defined onset (e.g. job loss) or no defined onset (e.g. job constraints; Van Breda, 2018); sudden (e.g. robbery) or expected (e.g. organizational change; Reich et al., 2010); infrequent or frequent (e.g. uncivil treatment by customers; Fisher et al., 2018). Considering the heterogeneous nature of stressors, the characteristics of a stressor need to be specified as precisely as possible in a resilience-building programme. In our checklist, we included this as the fifth criterion (see Table 2.1).

2.4.2. Positive adaptation

Positive adaptation should be included in any definition of resilience because it is considered as the visible manifestation of the process of resilience (Fletcher & Sarkar, 2013; Van Breda, 2018; Windle, 2011). In the included reviews we found three different trajectories of positive adaptation being distinguished: recovery, sustainability and posttraumatic growth (Ayed et al., 2019; Bryan et al., 2019; Chmitorz et al., 2018; Davydov et al., 2010; Fisher et al., 2018). *Recovery* implies that people are negatively affected by the stressor, but are able to bounce back to pre-stressor levels of functioning more quickly than others who experienced the same stressor (Ayed et al., 2019; Britt et al., 2016; Zautra et al., 2010). *Sustainability* implies that people remain relatively unaffected in the face of a stressor (Ayed et al., 2019; Bonanno, 2004; Zautra et al., 2010). *Growth* implies that people are able to function better after being exposed to a stressor than before and thus emphasizes the transformative effects of stressor exposure (Ayed et al., 2019).

The included reviews provided no clear answer about which trajectory of positive adaptation constitutes resilience. Some argued that it is dependent on the severity of the stressor (Fisher et al., 2018; Infurna & Luthar, 2018; Van Breda, 2018; Windle, 2011): recovery is more likely to occur in the face of acute, significant stressors (also known as *emergent resilience*) and sustainability in the face of chronic, daily stressors (also known as *minimal-impact resilience*; Bonanno & Diminich, 2013). Others argued that all three trajectories could be considered resilience trajectories (Ayed et al., 2019; Britt et al., 2016). Another area of debate is which indicators represent positive adaptation (Fletcher & Sarkar, 2013): improvement or sustainment of desirable outcomes (e.g. job performance, life satisfaction, wellbeing) or reduction of undesirable outcomes (e.g. stress-related

symptoms, burnout; Britt et al., 2016; Chmitorz et al., 2018; Fisher et al., 2018; Infurna & Luthar, 2018). Because positive adaptation can be understood in different ways, it is necessary to clarify how it is conceived in a resilience-building programme (see criterion 6 in Table 2.1).

2.4.3. Dynamic process

The term *dynamic process* in a definition of resilience indicates that resilience unfolds over time in the context of specific person-environment interactions (Britt et al., 2016; Fisher et al., 2018; Kossek & Perrigino, 2016; Masten, 2014). It also indicates that resilience encompasses several temporally related elements and should no longer be considered as a single, isolated construct (Bonanno, Romero, & Klein, 2015). The latter applies to all three isolated conceptualizations of resilience that have been distinguished in the past (Chmitorz et al., 2018; Fisher et al., 2018): 1) resilience as a *trait* (also called *invulnerability* or *invincibility*; Masten, 2014; Van Breda, 2018); 2) resilience as an *outcome*, which represents some type of positive adaptation (see section '2.4.2. Positive adaptation'); and 3) resilience as a *resource*, which represents a constellation of personal or environmental factors that protect people against harm (*protective factors*), promote wellbeing (*promotive factors*) or enable people to adapt to the circumstances they encounter (*adaptive factors*; Davydov et al., 2010; Fletcher & Sarkar, 2013; Masten, 2014). Resilience conceptualized as a trait is no longer valid because traits are – by definition – relatively stable across time and therefore at odds with resilience-building programmes focusing on change (Bryan et al., 2019; Chmitorz et al., 2018). Resilience conceptualized as an outcome is no longer valid as it has little discriminative validity: it does not include the critical condition of a stressor and is therefore quite similar to other concepts, such as adjustment and recovery (Masten, 2014; Van Breda, 2018). The same holds for resilience conceptualized as a resource, which is quite similar to factors that are associated with good health and development in general, such as self-efficacy and social support (Fisher et al., 2018; Masten, 2014). Because of these limitations, resilience should no longer be considered as a construct in isolation, but rather as a dynamic process encompassing several related elements.

An advantage of viewing resilience as a dynamic process is that earlier conceptualizations of resilience as a trait, an outcome and a resource can be incorporated into a process model (Bonanno et al., 2015; Kossek & Perrigino, 2016; Van Breda, 2018). In the included studies we found five examples of dynamic process models developed pertinent to the work context: the general conceptual model of resiliency (McLarnon & Rothstein, 2013), the framework for understanding employees' resilience to workplace stressors (Cooper et al., 2013), the integrative model of resilience for employees (Britt et al., 2016), the integrated occupational resilience framework (Kossek & Perrigino, 2016) and

resilience in a temporal context (Fisher et al., 2018). These models are fairly new and have not been compared before.

By comparing the aforementioned process models of resilience, we distilled five elements that should be considered as crucial elements in any process model of psychological resilience. These elements are: 1) baseline or *pre-stressor adjustment* as the necessary reference point for interpreting the outcomes of the process of resilience; 2) a *stressor* as the necessary condition to trigger the process of resilience; 3) *resilience mechanisms* as the core process (mediating variables) of resilience, which include the specific cognitive, behavioural and emotional reactions to adapt to a stressor – for example, appraisal of the stressor, coping with the stressor and seeking help from others (Britt et al., 2016; for an overview of resilience mechanisms, see Fisher et al., 2018); 4) personal and environmental *resilience resources* as the conditions that influence the relationships among the stressor, resilience mechanisms and resilience outcomes (moderating variables; for an overview of resilience resources, see, e.g. Bryan et al., 2019; Fisher et al., 2018); and 5) positive *resilience outcomes* as the visible manifestation of the process of resilience. Together, pre-stressor adjustment, a stressor, resilience mechanisms, resilience resources and resilience outcomes form a basic framework of the dynamic process of psychological resilience.

A process-based conceptualization of resilience has several implications for resilience-building programmes. Because there is not one best process model for resilience (yet), the first implication is that the process model of choice should be depicted and explained, including each element and the relationships among elements. In our checklist we have included this as the seventh criterion (see Table 2.1). The second implication is that the timing of the programme should be specified: is the programme planned before (proactive), during or after (reactive) the stressor (Chmitorz et al., 2018; Fisher et al., 2018)? In our checklist we have included this as the eighth criterion (see Table 2.1). The third implication is that the general programme aim of enhancing resilience needs to be specified, namely which element(s) in the process of resilience is (are) targeted to achieve maximum effect. In our checklist we have included this as the ninth criterion (see Table 2.1). Most obvious would be to enhance pre-stressor adjustment before stressor exposure, to enhance resilience mechanisms or resilience resources during stressor exposure and to facilitate positive adaptation after stressor exposure. Because a stressor is a necessary condition for resilience, removing the stressor should never be the target of a resilience programme. At most, managing the intensity and duration of the stressor could be an option before and during stressor exposure. Whatever target is chosen, it must be changeable because programmes are intended to achieve the set target (Fisher et al., 2018).

2.5. MEASUREMENT OF PSYCHOLOGICAL RESILIENCE

Four reviews synthesized the evidence on how resilience has been measured (see Table 2.2). Because we established that resilience should be considered as a dynamic process, we searched specifically for measures that operationalized resilience as such. We found only one measure: the short form of the Multidimensional Trauma Recovery and Resiliency instrument (MTRR99; Liang, Tummala-Narra, Bradley, & Harvey, 2007; original version: 135 items; Harvey et al., 2003). However, this measure may not be applicable to the work context because it is designed for those dealing with a history of (extensive) abuse. In a literature review of resilience-building programmes (Robertson et al., 2015), we found one process-based measure specifically designed for the work context: the Workplace Resilience Inventory (WRI; 60 items). This scale is based on the general conceptual model of resiliency (McLarnon & Rothstein, 2013) and measures the following variables in this model: initial responses; affective, behavioural and cognitive personal characteristics; opportunities; supports and resources; and affective, behavioural and cognitive self-regulatory processes. A limitation of the WRI is that it does not measure characteristics of the stressor and positive adaptation. This implies that instruments measuring all of the five aforementioned elements in the process of psychological resilience are not readily available. As most existing scales are not intended to measure the dynamic nature of resilience, measuring resilience may pose a challenge. However, in any so-called resilience-*building* programme, it is necessary to measure resilience to investigate whether the programme is successful in enhancing it. In our checklist, we have included this as the tenth criterion that needs to be met (see Table 2.1).

To simplify matters, one does not necessarily need an instrument covering all the elements in the process of psychological resilience. Resilience-building programmes probably just target one or two elements, for example, enhancing resilience mechanisms, resources and/or positive adaptation. To measure these elements, separate existing validated scales can be used that are relevant in the context (Infurna & Luthar, 2018; Smith-Osborne & Bolton, 2013; Van Breda, 2018). Not every element in the process of resilience can always be measured. For example, it is not possible to collect data on a person's pre-stressor adjustment in the case of a chronic stressor. However, it is important to explain which elements in the process model are assessed using which measures (see 10a in Table 2.1).

To measure resilience resources, sufficient scales are available. In the literature reviews regarding resilience measures (see Table 2.2), we found that the majority of the scales measure resources either with an exclusive focus on personal resources or with a focus on both personal and environmental resources. However, they all seem to measure different resources (for an in-depth discussion, see Pangallo, Zibarras, Lewis, & Flaxman,

2015). Most used is the Connor-Davidson Resilience Scale, either the 25-item version (CD-RISC25; Connor & Davidson, 2003) or the 10-item version (Campbell-Sills & Stein, 2007). The CD-RISC25 measures personal competence, trust in one's instincts, positive acceptance of change, control and spiritual influences. It has demonstrated acceptable psychometric properties (Pangallo et al., 2015). An example item is, 'I am able to adapt to change'. Another scale with acceptable psychometric properties is the Resilience Scale for Adults (33 items; Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005), which measures perception of self, perception of future, structured style, social competence, family cohesion and social resources. A scale developed for the work context is the Resilience at Work Scale (20 items; Winwood, Colon, & McEwen, 2013), which measures the resources of living authentically, finding one's calling, maintaining perspective, managing stress, interacting cooperatively, staying healthy and building networks. An example item is, 'I have a strong and reliable network of supportive colleagues at work'. An explanation why the nature and number of resources differ in these resilience scales is the lack of agreement about which resources represent resilience best (Pangallo et al., 2015) in which context and for which stressor (Britt et al., 2016).

In the reviews regarding resilience measurement (see Table 2.2), we mainly found information on how to measure resilience resources and less information on how to measure other elements in the process of resilience. With respect to resilience mechanisms, these reviews did not seem to make a clear distinction between mechanisms and resources which makes it all the more important to clarify how the process of resilience is perceived in a resilience-building programme (see criterion 7 in Table 2.1). To measure positive adaptation, two scales were described: the Hardy-Gill Resilience Scale (six items, e.g. 'Has this event made a permanent change in how you feel about your life?'; Hardy, Concato, & Gill, 2004) and the Brief Resilience Scale (six items; e.g. 'I tend to bounce back quickly after hard times'; Smith et al., 2008). However, a limitation of these measures is that they are based on self-report and thus only assess a subjective sense of resilience, not the demonstration of resilience (Britt et al., 2016). As the visible manifestation of resilience, positive adaptation is preferably measured more objectively using observer ratings (e.g. ratings by a colleague or a manager), objective data (e.g. absenteeism or productivity) or other alternatives for self-report (e.g. Situational Judgment Test; Cosco et al., 2017; Pangallo et al., 2015).

In addition to explaining which elements are measured, two other topics need to be addressed when measuring resilience in a resilience-building programme. First, it is important to specify the time points of measurement in order to ensure that change in resilience can be observed (see 10b in Table 2.1). To observe and measure change, the timescale of the process of resilience and the timescale of the stressor need to be taken into account (Britt et al., 2016; Fisher et al., 2018). Second, it is important to explain whether

a programme is targeted or universal (Vanhove et al., 2016). The former targets specific populations believed to experience a lack of resilience and the latter targets an entire working population regardless of individual differences. We translated this into the eleventh criterion called *eligibility* (see Table 2.1). As can be seen in Table 2.1, this criterion requires that resilience-building programmes report whether there is a baseline level of a specific element in the process of resilience at which people are eligible for the programme.

2.6. ENHANCEMENT OF PSYCHOLOGICAL RESILIENCE

Six literature reviews synthesized the evidence regarding the enhancement of resilience in a general or a working adult population (see Table 2.2). Our main finding is that these reviews were unable to establish how to effectively enhance resilience in adults. On the one hand, this is because of a lack of uniformity in the approaches used to enhance resilience: for example, a cognitive-behavioural approach (e.g. Abbott et al., 2009), a mindfulness-based approach (e.g. Jennings et al., 2013), a skills-based approach (e.g. Sherlock-Storey, Moss, & Timson, 2013), acceptance and commitment therapy (e.g. Burton, Pakenham, & Brown, 2010), attention and interpretation therapy (e.g. Sood, Prasad, Schroeder, & Varkey, 2011), a scenario-based approach (e.g. McCraty & Atkinson, 2012) and a mixed approach (e.g. Millear et al., 2008). On the other hand, this is because of a lack of uniformity in the duration of programmes, the mode of delivery (e.g. group-based, individual-based or electronic) and the theoretical basis of programmes (Joyce et al., 2018; Leppin et al., 2014; Robertson et al., 2015). Therefore, it remains unclear how to enhance resilience most effectively.

Even though existing systematic reviews have been unable to establish how to effectively enhance resilience, a resilience-building programme must provide the means to enhance resilience. In our checklist we have included this as the twelfth criterion that needs to be met (see Table 2.1). In explaining how a programme enhances resilience, we need to address three topics: 1) the programme approach itself by which resilience-building is accomplished (see 12a in Table 2.1); 2) the mode of delivery, as there are indications that an individual approach may be more effective than a group-based approach (Vanhove et al., 2016; see 12b in Table 2.1); and 3) the time period of the programme, in order to ensure that change in resilience can be observed (Fisher et al., 2018; see 12c in Table 2.1).

A recurring problem in research regarding the effectiveness of resilience-building programmes is inconsistency in programme descriptions (Robertson et al., 2015). Therefore, one needs to make sure that the definition, process model and measurement

of psychological resilience are consistent and aligned with both the target of the programme and the programme approach in order to ensure the content validity of a programme (Leppin et al., 2014; Robertson et al., 2015). In our checklist, we therefore have included *intra-programme* consistency as an overall criterion that needs to be met in a resilience-building programme (see first column in Table 2.1).

2.7. DISCUSSION

An elusive concept such as psychological resilience presents a challenge to anyone intending to design or review a programme for building psychological resilience. To advance the design and review of resilience-building programmes in the work context, the aim of this chapter was to develop a set of criteria for such programmes from a literature review. To accomplish this, we systematically reviewed studies that synthesized the evidence about the definition, conceptualization, measurement and enhancement of resilience. Conducting a literature review on the topic is considered an essential part in the design of theory- and evidence-based programmes (Bartholomew Eldredge et al., 2016). However, trying to establish criteria from our literature review was like navigating a labyrinth: we found that psychological resilience has been termed, defined, conceptualized, measured and enhanced in multiple ways. On the one hand, this fragmented field can be quite confusing; on the other hand it illustrates the need for criteria for resilience-building programmes.

The result of our systematic review is a checklist containing twelve criteria for resilience-building programmes in the work context. These criteria (with parenthetical numbers referring to Table 2.1) address the necessity to: specify which working population (2) is in need of psychological resilience (1); cite which definition is being used (4); depict and explain the process that people go through in order to adapt to a stressor (7); describe how resilience will be measured (10) and enhanced (12) as a dynamic process, as well as identify which type of positive adaptation (6) – to which stressor (5) in which work context (3) and when (8) – is involved; and to clarify the starting point (11) and purpose of the work (9). In this checklist, psychological resilience is not regarded as a single, isolated concept but rather as a dynamic process by which people adapt to stressors. To ensure that the way resilience is defined, measured and enhanced in a resilience-building programme is consistent with this process-based perspective on resilience, we added intra-programme consistency as an overall criterion to the checklist.

The checklist is a valuable tool for anyone intending to develop or review a resilience-building programme. It will help both researchers and practitioners to position themselves in the fragmented field of resilience and it will provide information about what

is relevant to consider when designing, describing or reviewing a resilience-building programme. Addressing the criteria will contribute to the quality of a resilience-building programme. A well-designed and well-described programme is a prerequisite to reliably investigate its effectiveness and to reliably compare different resilience-building programmes in a literature review or meta-analysis (Vanhove et al., 2016). Addressing the criteria will also contribute to a consistent programme design. Without consistency, the design of a programme is flawed which may impact its effectiveness. Lastly, the checklist will enable a more in-depth comparison of programmes when it comes to resilience content. In sum, the checklist can ensure the quality and consistency of a resilience-building programme and could become an indispensable tool in the design and review of such programmes.

The checklist for resilience-building programmes was developed for use in the work context. However, its use is not limited to this context. The checklist can also be used to advance research in other contexts, for example, in health care (e.g. patients) and in education (e.g. students), because programmes for building psychological resilience have also been developed for those contexts (Leppin et al., 2014; Macedo et al., 2014). For use in other contexts, only the words *working* and *work* need to be removed from, respectively, criteria 2 and 3 (see Table 2.1).

2.7.1. Limitations

As mentioned in the introduction, this chapter is restricted to psychological resilience. Therefore, the checklist that we developed is restricted to this type of resilience as well. In addition, the current literature review showed that psychological resilience should be regarded as a dynamic process. As a consequence, our checklist is not fully applicable to programmes that regard resilience as a single, isolated construct. An advantage of viewing resilience from a process-based perspective is that otherwise excluded types of resilience can be incorporated into the process model, either biological types of resilience or group-level types, for example, team resilience (Alliger, Cerasoli, Tannenbaum, & Vessey, 2015; Chapman et al., 2018), organizational resilience (Barasa, Mbau, & Gilson, 2018), family resilience or community resilience (Kimhi, 2016; Masten, 2014). However, discussing these types of resilience was beyond the scope of this chapter as was discussing genetic influences on resilience (Niitsu et al., 2019) and historical influences, such as adverse childhood experiences (Felitti et al., 1998). In a process model of psychological resilience, these factors could be included as personal and past environmental factors that moderate the relationship between the stressor and positive adaptation.

The checklist criteria were developed to address the resilience content of a resilience-building programme. As such, they can be considered important topics to take notice of in the design and description of such programmes. Some criteria may be

applicable to other types of programmes as well. However, they are not established for that purpose. To make sure that our criteria cover the resilience content of a resilience-building programme, we developed them by evaluating 21 literature reviews on psychological resilience. We restricted ourselves to reviews because they present relevant knowledge about a particular field of study. As a consequence, we assume that our checklist criteria cover the relevant topics in the field of psychological resilience. However, we cannot guarantee full coverage because we did not conduct a systematic review on single studies ourselves. From our review we concluded that there is growing consensus on the definition and conceptualization of resilience. However, there is still much unknown about the best ways to measure and enhance psychological resilience from a process-based perspective. More research is needed in these areas. The results could shed new light on the criteria for resilience-building programmes and may lead to more specific criteria in the future.

2.7.2. Implications for future research

The current systematic literature review has several implications for future research on resilience-building programmes, either a single programme (e.g. effectiveness study) or several programmes (e.g. systematic review). In the case of a single programme, the checklist can be used to optimize the design and description of that programme with respect to its resilience content. For instance, the checklist criteria prescribe that programmes should no longer be based on a single, isolated understanding of resilience as a trait, an outcome or a resource, but on the most recent and recommended understanding of psychological resilience as a dynamic process (see Table 2.3). In order to not linger in the past and to advance research on programmes for building psychological resilience, we recommend researchers adopt this process-based perspective. Adopting this perspective also implies that the factor 'time' should be taken into account to ensure that change in resilience can be observed and achieved. The timescale of the process of resilience and the timescale of the stressor should especially be taken into account (for a more in-depth discussion on this topic, see Britt et al., 2016; Fisher et al., 2018). In the case of several resilience-building programmes, the checklist can be used for an in-depth evaluation and comparison of programmes. Comparing programmes against the checklist criteria could offer new insights into the quality of resilience-building programmes. Therefore, we recommend the use of the checklist not only when designing a single programme, but also when reviewing several programmes.

Caution is needed, however, when the checklist criteria are used for selection or classification. Given the established criteria in the current chapter, we expect that no or few existing resilience-building programmes will be able to meet all proposed criteria. To illustrate, we applied the checklist to the fourteen included studies in the systematic review

of Robertson and colleagues (2015). With our criteria for selection of resilience-building programmes, none of these fourteen studies would be eligible for inclusion. Therefore, we do not recommend using all checklist criteria as selection and classification criteria (yet). However, we do recommend researchers be more specific when selecting or classifying programmes as resilience-building programmes. In the case of systematic reviews of the effectiveness of resilience-building programmes, researchers could be more selective by using not one, but all three criteria that we mentioned in the introduction and included in our checklist: 1) the general aim of the programme is to enhance resilience (criterion 9 in Table 2.1); 2) the means are offered to enhance resilience (criterion 12 in Table 2.1); and 3) resilience is measured (criterion 10 in Table 2.1). In addition, 4) defining resilience (criterion 4 in Table 2.1; and 5) specifying the stressor (criterion 5 in Table 2.1) could be added as inclusion criteria to make sure that no programmes are selected that do not define the topic of interest and do not regard a stressor as a critical condition for resilience. Using a stricter set of criteria to guide the selection of studies in new systematic reviews of resilience-building programmes could contribute to a better selection of included studies and therefore to more precision in determining the effectiveness of resilience-building programmes.

2.7.3. Implications for practice

Practitioners interested in offering or developing resilience-building programmes should be aware that the literature regarding psychological resilience in the work context is fragmented. At first sight, the concept may seem straightforward: positive adaptation in the context of a stressor. However, an area of inconsistency has been the conceptualization of resilience: *what* allows people to positively adapt to stressors (Fisher et al., 2018). Different conceptualizations of psychological resilience can be seen as a reflection of an evolving field: over time, resilience has transitioned from a trait-based, outcome-based and resource-based perspective to the current view that resilience is the dynamic process by which people successfully adapt to stressors (Fisher et al., 2018). As a consequence, practitioners should not superficially pick their favourite or familiar definition, measure or model of resilience but should take notice of the most recent conceptualization of resilience. We recommend regarding resilience as a dynamic process from now on and developing and offering programmes based on this view. Programmes based on earlier conceptualizations of resilience should no longer be promoted as resilience-building programmes but should be promoted under different names (e.g. resource-building or wellbeing programmes).

The checklist in Table 2.1 is a useful tool for practitioners to navigate their way through the fragmented field of psychological resilience. When developing, evaluating, purchasing or comparing programmes, they can use the checklist in Table 2.1 to address

the right and most important topics for the resilience-building content of a programme. Therefore, practitioners should seriously consider using the checklist as a valuable tool to optimize the design and ensure the quality of their resilience-building programmes. All interested stakeholders will benefit from well-designed resilience-building programmes.

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Chapter 3

Resilience mechanisms at work: The Psychological Immunity-Psychological Elasticity (PI-PE) model of psychological resilience

'Whereas personality is seen as something that shapes the life course, resilience is presumed being shaped by the life course.'[6]

[6] Friborg, 2006, p. 45-46

Resilience mechanisms at work: The Psychological Immunity-Psychological Elasticity (PI-PE) model of psychological resilience

Abstract

Recently, scientists have shifted their focus from studying psychological resilience as a single, isolated construct (e.g. attribute or outcome) to studying it as a dynamic process encompassing a number of temporally related elements. Models depicting this process explain why some people adapt to stressor exposure, whereas others do not. To date, these process models did not sufficiently explain how people adapt to a stressor *differently*. To address this issue, we developed a new model of psychological resilience, called the Psychological Immunity-Psychological Elasticity (PI-PE) model. The aim of this chapter is to clarify this model and to discuss its added value. First, we explain how we derived the PI-PE model from the literature regarding both the crucial elements in any resilience process model and the (mal)adaptive outcomes following stressful events. Secondly, we describe the different elements that make up the model. Characteristic of the PI-PE model is that it distinguishes between two pathways of psychological resilience – psychological immunity and psychological elasticity – with four adaptive outcomes, namely sustainability, recovery, transformation and thriving. To explain how people arrive at these different outcomes, we argue that two consecutive mechanisms are critical in these pathways: tolerance and narrative construction. Taken as a whole, the PI-PE model presents a comprehensive framework to inspire both research and practice. It explains how the process of psychological resilience works differently for different people and how to support individuals in their process towards successfully and differently adapting to stressors.

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3.1. INTRODUCTION

The intriguing question that has driven research regarding psychological resilience is why some people maintain functioning after a stressful period or event (*stressor*), whereas others do not (Crane, 2017; Fletcher & Sarkar, 2013). This question suggests that people have two options after being exposed to a stressor, either resilience or non-resilience (Van Breda, 2018). Even though this dichotomy may have an intuitive appeal, scientists nowadays agree that psychological resilience should not be treated as a single, isolated construct (e.g. outcome or attribute), but rather as a dynamic process by which people adapt to stressful events or circumstances they are exposed to (Bonanno, Romero, & Klein, 2015; Fisher, Ragsdale, & Fisher, 2018; IJntema, Burger, & Schaufeli, 2019). To date, research has identified several trajectories which could be considered as resilience trajectories, for example, sustainability, recovery and (posttraumatic) growth (e.g. Ayed, Toner, & Priebe, 2019; Bonanno & Diminich, 2013; Britt, Shen, Sinclair, Grossman, & Klieger, 2016; Bryan, O'Shea, & MacIntyre, 2019; Zautra, Arewasikporn, & Davis, 2010). *Sustainability* implies that people maintain relatively stable and healthy levels of functioning after being exposed to a stressor (Bonanno, 2004); *recovery* implies that people are negatively affected by a stressor, but are able to 'bounce back' (rapidly) to their pre-stressor level of functioning (Zautra, Arewasikporn, et al., 2010); *growth* implies that people function better after being exposed to a stressor than before (Ayed et al., 2019).

As there is more than one resilience trajectory, the question as to why people adapt to a stressor should be reformulated into the question as to how people adapt differently to a stressor. To answer this question, we need to identify which mechanisms could explain these differences. Mechanisms are the core processes or mediating variables in the resilience process (Fisher et al., 2018). Research regarding resilience mechanisms is still in its infancy. Several mechanisms have been identified in the literature, for example, stressor appraisal, seeking support, planning, coping, finding meaning and self-regulation (Britt et al., 2016; Fisher et al., 2018). However, scientists do not agree as to which mechanisms are core to the resilience process. In addition, they do not clearly distinguish mechanisms (i.e. mediating variables) from moderating variables influencing this process (IJntema et al., 2019). Finally, existing dynamic process models (e.g. Britt et al., 2016; Fisher et al., 2018; Kossek & Perrigino, 2016) do not explain by which mechanisms people adapt *differently* to stressors. To answer this question, we developed a new model of psychological resilience: the *Psychological Immunity-Psychological Elasticity (PI-PE) model* (see Figure 3.1). This model introduces two consecutive mechanisms, tolerance and narrative construction, which help to explain why people arrive at different outcomes after being exposed to a specific stressor. The aim of this chapter is to clarify this new model (see Table 3.1 for an explanation of each concept in the model) and to discuss its added value.

3.2. PSYCHOLOGICAL IMMUNITY-PSYCHOLOGICAL ELASTICITY MODEL

The PI-PE model is restricted to psychological resilience, which emphasizes resilience in psychological functioning: the interplay between a person's behaviour, cognition and affect at a certain time in a certain context (IJntema et al., 2019). We derived this model from the existing literature regarding the crucial elements in any process model of psychological resilience (Bonanno et al., 2015; Fisher et al., 2018; IJntema et al., 2019) and from the literature regarding adaptive and maladaptive outcomes following stressful events or circumstances (e.g. Ayed et al., 2019; Carver, 1998; Zautra, Arewasikporn, et al., 2010). As can be seen in Figure 3.1, the PI-PE model illustrates that people adapt to stressors differently. The model consists of two consecutive mechanisms and four conditions. The two mechanisms are: *tolerance* to a specific stressor and *narrative construction*. The four conditions are: 1) *pre-stressor adjustment*, which functions as a reference point to determine whether adaptation to a stressor has occurred; 2) the *stressor* as the critical condition to trigger the process of resilience; 3) *personal and environmental factors* as the moderating variables that influence the relationship between the stressor, resilience mechanisms and resilience outcomes, and 4) *adaptation* to the stressor as the visible manifestation of the process of resilience. As can be seen in Figure 3.1, adaptation to the stressor is divided into four adaptive outcomes: *sustainability*, *recovery*, *transformation* and *thriving* (e.g. Bonanno, 2004; Carver, 1998; Tedeschi & Calhoun, 2004; Zautra, Arewasikporn, et al., 2010). By way of contrast, two maladaptive outcomes are distinguished as well: *rigidity* and *vulnerability* (e.g. Niesen, De Witte, & Battistelli, 2014; Friborg, Hjemdal, Martinussen, & Rosenvinge, 2009). In this chapter, we explain in more detail these elements that make up the PI-PE model.

The unique contribution of the PI-PE model is that the two resilience mechanisms of tolerance and narrative construction explain how people arrive at different positive outcomes after being exposed to a stressor. By adding these two mechanisms to the model, two pathways of psychological resilience emerge, each with two adaptive outcomes: the pathway of *psychological immunity* resulting in either sustainability or thriving and the pathway of *psychological elasticity* resulting in either recovery or transformation. In addition, the maladaptive pathway of *psychological susceptibility* also emerges with two outcomes: rigidity or vulnerability. The PI-PE model defines psychological resilience as a dynamic process by which people adapt to a specific stressor. This process is triggered by a specific stressful event/circumstance and is aimed at enhancing, maintaining, restoring or altering psychological functioning, either via the pathway of psychological immunity or via the pathway of psychological elasticity.

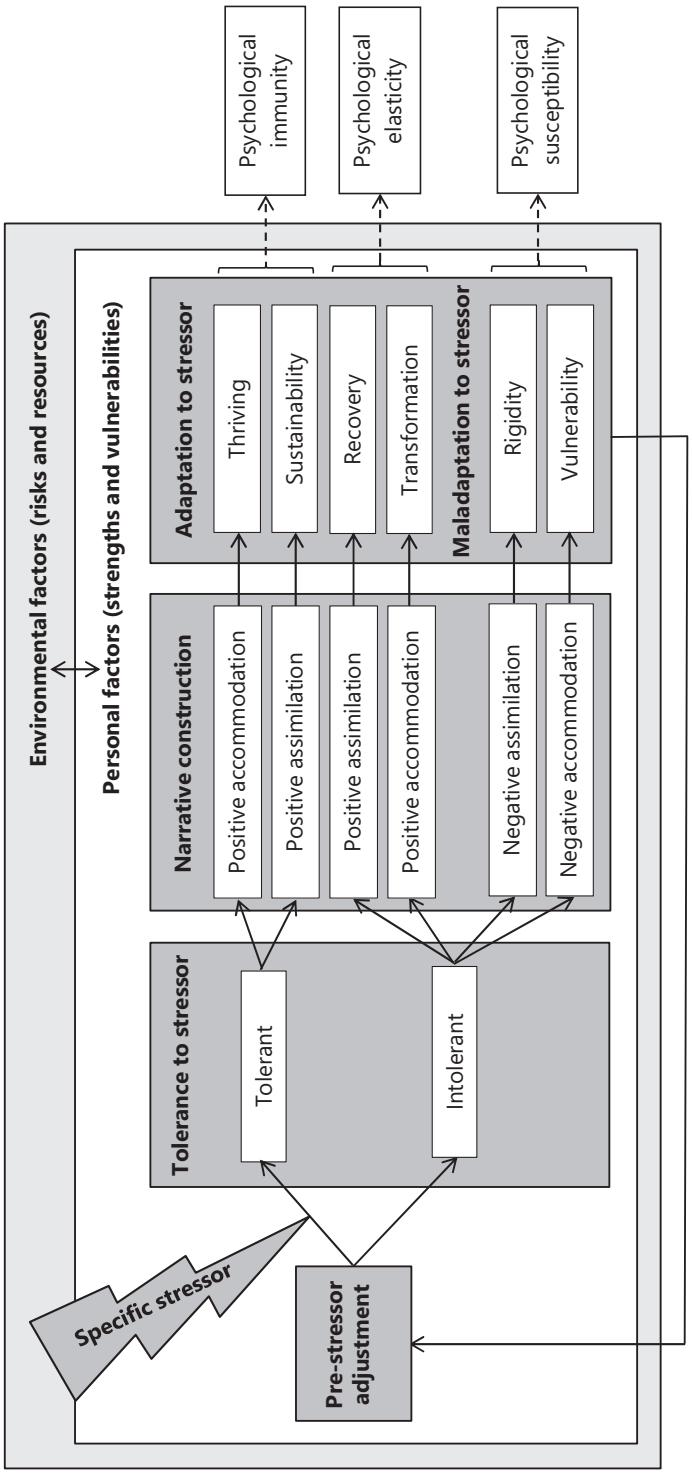

Figure 3.1. *The Psychological Immunity-Psychological Elasticity (PI-PE) model of psychological resilience*

Table 3.1. *Definitions of all concepts and their function in the PI-PE model*

Concept	Definition	Function in the PI-PE model
Pre-stressor adjustment	The extent to which a person is psychologically adapted to a specific stressor prior to exposure to that stressor.	A setpoint for interpreting the outcome of the process of psychological resilience.
Specific stressor	A specific demanding or difficult situation a person is facing.	Stimulus that is needed to trigger the process of psychological resilience.
Tolerance to specific stressor	The extent to which a person refrains from responding defensively to a specific stressor.	The immediate response after stressor exposure and the first phase in which psychological resilience can be demonstrated.
Tolerant	Refraining from responding defensively to a specific stressor.	The positive extreme of the tolerance dimension.
Intolerant	Responding defensively to a specific stressor.	The negative extreme of the tolerance dimension.
Narrative construction	The extent to which a person is able to make sense of a stressful experience and come to terms with it.	The second phase in which psychological resilience can be demonstrated.
Positive assimilation	Incorporating a stressful experience into an existing narrative which is constructive for the self or the world.	A type of narrative construction.
Positive accommodation	Creating a new narrative which is constructive for the self or the world in order to incorporate a stressful experience.	A type of narrative construction.
Negative assimilation	Incorporating a stressful experience into an existing narrative which is unconstructive for the self or the world.	A type of narrative construction.
Negative accommodation	Creating a new narrative which is unconstructive for the self or the world in order to incorporate a stressful experience.	A type of narrative construction.
Adaptive outcomes	Successful or better-than-expected outcomes after a stressful event.	A visible manifestation of psychological resilience.
Thriving	Optimized psychological functioning compared to pre-stressor functioning, whereby functioning is strengthened by that stressor.	A type of adaptation.
Sustainability	Maintained psychological functioning by enduring a stressor and continuing forward.	A type of adaptation.
Recovery	Restored psychological functioning, exhibited by bouncing back (rapidly) to pre-stressor functioning (after this functioning was affected by a stressor).	A type of adaptation.

Transformation	Changed psychological functioning (through narrative reconstruction) compared to pre-stressor functioning (after this functioning was affected by a stressor).	A type of adaptation.
Maladaptive outcomes	Unsuccessful outcomes after a stressful event.	A visible manifestation of the absence of psychological resilience.
Rigidity	Restricted psychological functioning, exhibited by ineffective fixation in response to a stressor.	A type of maladaptation.
Vulnerability	Deteriorated psychological functioning in response to a stressor, exhibited by enhanced sensitization to that stressor.	A type of maladaptation.
Personal factors	Internal factors that influence a person's pre-stressor adjustment, tolerance to a stressor, narrative construction and positive adaptation to a stressor.	To show that the psychological process of resilience is embedded in a specific person.
Environmental factors	External factors that influence a person's pre-stressor adjustment, tolerance to a stressor, narrative construction and positive adaptation to a stressor.	To show that the psychological process of resilience is embedded in a specific context.
Pathway of psychological immunity	Demonstration that a person's pre-stressor adjustment is robust enough to tolerate a specific stressor.	A pathway of psychological resilience.
Pathway of psychological elasticity	Demonstration that a person is able to construct a personal narrative that enables them to adapt to a specific stressor after their functioning was initially affected by that stressor.	A pathway of psychological resilience.
Pathway of psychological susceptibility	Demonstration that a person is not able to construct a personal narrative that enables them to neither be immune nor adapt to a specific stressor after functioning was initially affected by that stressor.	A maladaptive pathway.

Below, we explain in corresponding sections all the elements depicted in the PI-PE model (see Figure 3.1): pre-stressor adjustment, specific stressor, tolerance, narrative construction, (mal)adaptive outcomes, and personal and environmental factors. Subsequently, we explain the pathways of psychological immunity, psychological elasticity and psychological susceptibility. In the discussion, we reflect on the added value of the PI-PE model, its applicability, its limitations and its relevance for future research and practice.

3.2.1. Pre-stressor adjustment

Many process models of psychological resilience start with a stressor (e.g. Britt et al., 2016; Kossek & Perrigino, 2016; McLarnon & Rothstein, 2013). However, it is hard to determine whether positive adaptation to a specific stressor has occurred – the outcome of the process of psychological resilience – without having information about the extent to which a person was adjusted to that stressor prior to exposure (Bonanno et al., 2015; IJntema et al., 2019). That is why the PI-PE model starts with a person's pre-stressor adjustment. We define pre-stressor adjustment as the extent to which a person is psychologically adapted to a stressor prior to being exposed to that stressor (see Table 3.1). It functions as a setpoint for interpreting the outcome of the process of psychological resilience (Bonanno et al., 2015). This kind of adjustment may be the consequence of previous experience(s) with that specific stressor. For example, a person facing job loss may have had experience with job loss in the past. This previous experience (either positive or negative) will influence the new experience with job loss. Because the occurrence of a stressor is often unpredictable, it is not always possible to collect data on a person's pre-stressor adjustment (Bonanno et al., 2015).

3.2.2. Specific stressor

A stressor is regarded as the antecedent or stimulus that is needed to trigger the process of psychological resilience (Fletcher & Sarkar, 2013; Windle, 2011). Without a stressor, psychological resilience will not emerge (Bonanno et al., 2015). Therefore, this crucial element is included in the PI-PE model. We define a stressor as a specific demanding or difficult situation a person is facing (similar to Seyles definition of a stressor as an environmental demand, see Lazarus & Folkman, 1984; see Table 3.1). Stressors may come in different shapes and sizes. For example, a stressor may be challenging (e.g. skill demands) or hindering (e.g. role conflict; Crane & Searle, 2016); time-bound/acute (e.g. job rejection) or ongoing (e.g. being bullied; Bonanno et al., 2015); mild (e.g. daily hassles at work, such as having an argument with a colleague) or strong (e.g. job loss; Fletcher & Sarkar, 2013); sudden (e.g. an accident) or expected (e.g. negative review after underperformance; Zautra, Hall, & Murray, 2010); infrequent or frequent (e.g. uncivil treatment by customers; Fisher et al., 2018). In short, a stressor could be any demanding or difficult situation a person is facing, whereby the characteristics of the stressor (nature, duration, intensity, predictability and frequency; Britt et al., 2016) will influence the process of psychological resilience.

The PI-PE model assumes that psychological resilience does not emerge after stressors in general, but only in relation to a *specific* stressor. In the case of multiple or cumulative stressors, the PI-PE model assumes that psychological resilience may only

develop in relation to one specific stressor at a time. Any other stressor is regarded as an environmental factor. For example, by successfully overcoming bankruptcy, an entrepreneur demonstrates psychological resilience to that specific stressor and not automatically to other stressors as well. If the bankruptcy creates marital problems, these problems function as an environmental factor that may hinder successful adaptation to bankruptcy. And if the entrepreneur demonstrates psychological resilience to bankruptcy, this does not automatically mean that they will demonstrate resilience to marital problems as well.

3.2.3. Tolerance

The first mechanism in the PI-PE model is tolerance to a specific stressor. We noticed that the term 'tolerance' is often used in the (occupational) resilience literature (e.g. Davydov, Stewart, Ritchie, & Chaudieu, 2010; Kossek & Perrigino, 2016), but not included in any process model of psychological resilience. We define tolerance as the extent to which a person refrains from responding defensively to a specific stressor (see Table 3.1; comparable to *stress tolerance*, see Izutsu, Tsutsumi, Asukai, Kurita, & Kawamura, 2004). We consider tolerance to be a critical mechanism in the dynamic process of psychological resilience because it explains why some people are not affected by a specific stressor and maintain functioning, whereas others do not. Those that maintain functioning demonstrate that their pre-stressor adjustment is robust enough to accept and endure the specific stressor. Therefore, we included tolerance to a specific stressor in the PI-PE model as the immediate response to that stressor and the first phase in which psychological resilience could be demonstrated.

We conceptualize tolerance as actual behaviour (*applied tolerance*) and not as merely accepting something one does not like (Van Doorn, 2015). Typically, tolerance includes a paradox (Van Doorn, 2014): despite the presence of a stressor, a tolerant person refrains from a stress response. A more natural reaction to a stressor would be the opposite 'intolerance': a defensive or stress response, to fight, flight or freeze (Woolfolk, Lehrer, & Allen, 2007). For example, an employee who is tolerant of a reorganization in the company does not have to be in favour of this reorganization to cooperate. An employee who is intolerant, may act more in line with opposing thoughts and negative emotions about the reorganization, for example, by calling in sick more often or by displaying counterproductive behaviour. Due to its paradoxical nature, tolerance is considered to be a learned response and intolerance a natural response (Van Doorn, 2015).

Since tolerance depends on a specific stressor, a person can be tolerant to one stressor, but not to another. Tolerance to a specific stressor may be acquired by successfully dealing with that stressor. Those mastery experiences strengthen a person's resistance to similar future stressors. This process is referred to as the *steeling effect* of

adversity (Rutter, 1985, 2012). The person is better prepared for adversity in the future (*psychological preparedness*; Janoff-Bulman, 2004). The opposite could also happen, the *sensitizing effect* of adversity (Rutter, 1985, 2012). In this case, the stressful experience does not strengthen the person, but makes the person more susceptible to similar future stressors. Instead of tolerance, the person has acquired intolerance to the particular stressor. In the case of an ongoing stressor, people may be tolerant up to a certain level or threshold at which their tolerance turns into intolerance.

3.2.4. Narrative construction

The second mechanism in the PI-PE model is narrative construction. We adopted this term from Meichenbaum (2006), who emphasized the critical role of the self-narrative for resilience. We define narrative construction as the extent to which a person is able to make sense of their experience and come to terms with it (Wilson, 2011; see Table 3.1). We consider it as a critical mechanism in the dynamic process of psychological resilience because it explains why some people, once affected by a stressor, are able to bounce back and others do not. Those that bounce back demonstrate that they have the personal and environmental resources to make sense of their experience and come to terms with it. If psychological resilience was not demonstrated in the first phase because of an intolerant response, narrative construction signifies the second phase in which psychological resilience could be demonstrated.

Narrative construction may require more or less effort depending on the impact of the stressor on a person's basic assumptions, which are 'beliefs that ground, secure or orient people, that give a sense of reality, meaning or a purpose in life' (Kauffman, 2002, p. 1). Highly stressful or traumatic events are known to have a disruptive effect on a person's basic assumptions (Janoff-Bulman, 1992; Joseph & Linley, 2005; Parkes, 1971; Tedeschi & Calhoun, 2004). The 'shattered assumptions theory' states that traumatic events disrupt beliefs related to the benevolence and meaningfulness of the world and the worthiness of the self (Janoff-Bulman, 1992). Scientists refer to these core assumptions in terms such as *worldview*, *higher-order schemata* (Calhoun & Tedeschi, 1999), *assumptive world* (Jannoff-Bulman, 2004; Parkes, 1971), *self-narrative* (Neimeyer, 2006) and *core narrative* (Wilson, 2011). When disruption occurs, there is a need to revise, repair or replace basic assumptions to integrate new information (Joseph & Linley, 2005; Neimeyer, 2006). As such, narrative construction is a way of coping with stressors (Neimeyer & Levitt, 2001).

The 'organismic valuing theory of growth through adversity' (Joseph & Linley, 2005; Joseph, 2009) has adopted the Piagetian concepts of *accommodation* and *assimilation* to distinguish between two different processes in narrative construction. When the stressor does not have a disruptive effect on people's core narratives, they will be able to assimilate the experience within existing narratives about themselves and the social world. As such,

assimilation does not require a change in core narratives, but 'only' a change in the interpretation or meaning of the event to make it less contradictive to their core narratives. However, when the stressor has a disruptive effect on people's core narratives, assimilation is not possible. In that case, people need to change their existing narrative and construct a new narrative about themselves and/or the world in accord with lessons learned from the experience. A distinction can be made between *positive* and *negative* assimilation/ accommodation. Positive assimilation/accommodation is directed at growth and leads to adaptation. Negative assimilation/accommodation is distress-focused and leads to maladaptation (for more information on assimilation and accommodation, see Brandtstädter & Rothermund, 2002; Leipold & Greve, 2009).

3.2.5. (Mal)adaptative outcomes

The outcome of the process of psychological resilience should be some type of positive adaptation because only a successful or better-than-expected outcome after a stressful event implies resilience (Van Breda, 2018; Windle, 2011). Positive adaptation is regarded as the visible manifestation of psychological resilience (Fisher et al., 2018). Therefore, we included it as a crucial element in the PI-PE model. The term 'positive' denotes a type of adaptation that leads to an enhanced sense of mastery (Earvolino-Ramirez, 2007). In the introduction to this chapter, we distinguished three types of positive adaptation: sustainability, recovery and growth. As can be seen in Figure 3.1, the PI-PE model does not include (posttraumatic) growth, but rather thriving and transformation, which is a more specific distinction that has been made in the literature (Carver, 1998; Calhoun & Tedeschi, 2006; Lepore & Revenson, 2006; Ryff & Singer, 2003). Below, we discuss these four types of positive adaptation and contrast them with two types of maladaptation, that are indicative of poor psychological resilience: rigidity and vulnerability.

3.2.5.1. Sustainability

Sustainability, also known as *resistance* (Lepore & Revenson, 2006) or *robust resilience* (Fletcher & Sarkar, 2016), is a type of positive adaptation that we define as maintained psychological functioning by enduring a stressor and continuing forward (see Table 3.1; based on the definition of Zautra, 2009). It emphasizes the ability of a person to maintain a stable equilibrium of healthy functioning in the face of a stressor (Ayed et al., 2019; Bonanno, 2004). The difference with non-resilience is that a resilient person is relatively unaffected by the stressor and able to continue to function capably (tolerant), whereas a non-resilient person is affected by the stressor and experiences a period of malfunctioning (intolerant).

3.2.5.2. Recovery

Recovery or *rebound resilience* (Fletcher & Sarkar, 2016) is a type of positive adaptation that we define as restored psychological functioning, exhibited by bouncing back (rapidly) to pre-stressor functioning after this functioning was affected by a stressor (based on the definition of Smith, Tooley, Christopher, & Kay, 2010; see Table 3.1). Recovery assumes that people experience a period of distress or malfunctioning after being exposed to a stressor and are able to return to previous pre-stressor levels of functioning (Ayed et al., 2019). This is known as the principle 'homeostasis' (a term coined by Cannon in the 1920s): a return to a former, more balanced state. In the resilience literature, recovery is not restricted to the recovery process itself, but is used for comparing a person's recovery to what is considered a 'normal' standard of recovery (Zautra, Hall, et al., 2010). Thus, a resilient person recovers more quickly than a less resilient person (Martin-Breen & Anderies, 2011). Environmental and personal factors may hinder or support the extent and speed of recovery (Zautra, Hall, et al., 2010).

3.2.5.3. Transformation

Transformation or *reconfiguratio*n (Lepore & Revenson, 2006) is a type of positive adaptation that we define as changed psychological functioning (through narrative reconstruction) compared to pre-stressor functioning (after this functioning was affected by a stressor; see Table 3.1). Transformation emphasizes the life-changing effect of struggling with an adverse and stressful event (Tedeschi & Calhoun, 2004). Similar to recovery, the person's functioning is affected by the stressor (intolerant). In contrast to recovery, the person is unable to incorporate the experience into an existing frame of mind (assimilation). Instead, the person has to change an existing frame of mind in order to integrate the stressful or traumatic experience (accommodation; Lepore & Revenson, 2006). The stressor symbolizes a turning point (Rutter, 1999) or a transition (Parkes, 1971) in a person's life. A resilient person is able to make that turn in life, to make sense of the experience and to come to terms with it, whereas a non-resilient person is not.

3.2.5.4. Thriving

Thriving differs in one important aspect from the other three types of positive adaptation: a stressor is not a necessary condition for thriving. This is reflected in the definition of thriving: 'a psychological state in which individuals experience both a sense of vitality and a sense of learning' (Spreitzer, Sutcliffe, Dutton, Sonenshein, & Grant, 2005, p. 538). We confine ourselves to thriving in the face of a stressor and define it as optimized psychological functioning compared to pre-stressor functioning, whereby functioning is strengthened by that stressor (see Table 3.1). In this sense, thriving emphasizes the benefits that may be associated with passing through a challenging experience (Carver, 1998).

These benefits can be a new skill, self-knowledge, confidence and strengthened personal relationships or resources (Carver, 1998; Ryff, 2014). Thriving and sustainability have in common that a person's functioning is not negatively affected by the stressor (tolerant), in contrast to recovery and transformation where the person's functioning is negatively affected by the stressor (intolerant). Recovery and sustainability do not require a person to change their frame of mind (assimilation), while thriving and transformation do require a change in frame of mind (accommodation).

3.2.5.5. Rigidity

People do not always adapt after being exposed to a stressor. The exposure can also lead to maladaptation and one particular maladaptive outcome is rigidity. Psychological rigidity has been defined as persistence in a course of action that is possibly no longer the best way to solve the problem or to reduce the threat (Cowen, 1952; Niesen et al., 2014). We define rigidity as restricted psychological functioning, exhibited by ineffective fixation in response to a stressor (see Table 3.1). According to the threat-rigidity thesis (Staw, Sandelands, & Dutton, 1981), adverse events evoke anxiety and stress in people which narrow down perception and information processing (*restriction of information*) and restrict their behavioural repertoire in responding appropriately to stressors (*constriction of control*). The displayed behaviour is less varied or flexible, more habitual and more rigid. The threat-rigidity thesis emphasizes that people often react to stressors with well-learned behaviours and habitual responses. If a habitual response is effective to adapt to a stressor, we regard it as sustainability. If a habitual response is ineffective to adapt to a stressor, we regard it as rigidity.

3.2.5.6. Vulnerability

Vulnerability is by some authors conceived of as the negative counterpart of resilience (Friborg et al., 2009; Kaplan, 2013). In this chapter, we do not adopt a single dimension perspective as we distinguish four adaptive and two maladaptive outcomes. We consider vulnerability as one type of maladaptation and define it as deteriorated psychological functioning in response to a stressor, exhibited by enhanced sensitization to that stressor (see Table 3.1). A person is more fragile after the stressor than before (London, 1983). Vulnerability is comparable to 'chronic dysfunction' (Bonanno & Diminich, 2013; Bonanno et al., 2015). Both vulnerability and transformation are characterized by intolerance to the perceived stressor and by the accommodation of an existing frame of mind to incorporate the adverse experience. However, the difference is that transformation is associated with positive (effective) accommodation, whereas vulnerability is associated with negative (ineffective) accommodation. The latter causes the person to be more sensitive to a future stressor than before stressor exposure (*negative cascading effect*; Masten, 2014).

3.2.6. Personal and environmental factors

The PI-PE model describes the psychological process a person goes through after being exposed to a stressor. This psychological process does not occur in isolation, but is embedded in a specific person and in a specific context. As such, both personal and environmental factors are influencing this psychological process. We define personal and environmental factors as internal and external influences on a person's pre-stressor adjustment, tolerance and narrative construction and on (mal)adaptive outcomes (see Table 3.1). *Personal factors* are internal strengths and vulnerabilities, such as (a lack of) self-efficacy, optimism, motivation, hope and perspective (Ayed et al., 2019; Bryan et al., 2019). In a meta-analytic study, self-efficacy, positive affect and self-esteem were found to be the strongest personal protective factors against stressors (Lee et al., 2013). *Environmental factors* are external risks and resources, such as other stressors and (a lack of) support. This support can come from close relationships (partner, family, friends) as well as social networks (related to work, sport, leisure, common interest or religion) and the community (e.g. neighbourhood, school, work, village/town, virtual, national, international; Ayed et al., 2019; Bryan et al., 2019; Masten, 2014; Windle, 2011). Research has identified many personal and environmental factors (see, for example, Britt et al., 2016; Bryan et al., 2019; Fisher et al., 2018), also known as 'protective factors', 'promoting factors' and 'adaptive factors' (Davydov et al., 2010; Fletcher & Sarkar, 2013; Masten, 2014).

In the resilience literature, the question has been raised to what extent personal and environmental factors, such as self-efficacy and social support, are different from factors that are associated with good health and development in general (Masten, 2014). These general health factors are also referred to as *general adaptive systems* that protect humans under many different circumstances (Masten, 2014) and as *general resistance resources* that facilitate successful coping with the inherent stressors of human existence *(salutogenesis*; Antonovsky, 1996). According to Fisher and colleagues (2018), a 'defining feature of the variables in this category is that they are present irrespective of whether someone experiences adversity, but nonetheless can provide a protective or ameliorative function in the event that adversity does occur' (p. 11). Therefore, we do not consider the personal and environmental factors in the PI-PE model to be different from health factors in general.

3.2.7. Three pathways

The mechanisms of tolerance and narrative construction are central to the three pathways depicted in the PI-PE model: 1) psychological immunity, 2) psychological elasticity and 3) psychological susceptibility. The first two pathways are emphasized in the title of the PI-PE model as they imply resilience. The third path is included in the model by way of

contrast as it illustrates the absence of resilience. The first two pathways are named after two commonly used metaphors for psychological resilience: *psychological immunity* (Davydov et al., 2010; Shastri, 2013) and *elasticity* (e.g. a spring, elastic band, elasticity of metal or a bending tree; Fletcher & Sarkar, 2013; Masten, 2014). Psychological immunity is a pathway in which a person demonstrates that their pre-stressor adjustment is robust enough to tolerate a specific stressor. The core mechanism in this pathway, that distinguishes between resilience and non-resilience, is tolerance. This pathway results in the adaptive outcome of either sustainability or thriving, depending on narrative construction. Psychological elasticity is a pathway in which a person – who's functioning was initially affected by the stressor (intolerant) – is able to bounce back and adapt to the stressor. The core mechanism in this pathway, that distinguishes between resilience and non-resilience, is narrative construction. This pathway results in the adaptive outcome of either recovery or transformation. To the best of our knowledge, the PI-PE model is the first model to combine these two metaphors into one model.

For most people, the pathway of psychological immunity will be most appealing. In this pathway, a person is able to endure the event (tolerance), manage the event (availability and use of personal and environmental factors), and make sense of it and find closure (positive assimilation or accommodation). The pathway of psychological elasticity is more demanding because a person must at least deal with the negative effects of being intolerant to a specific stressor and – in the case of transformation – also construct a new narrative or alter an existing narrative about the self and the social world to adapt to that stressor. This dual process leading to transformation in the PI-PE model resembles the dual process in coping with bereavement: the processing of an experience of loss and the struggle to reorient oneself in a changed world (Stroebe & Schut, 2010).

Which pathway a person might be involved in is not by choice, but depends on 1) the person's pre-stressor adjustment; 2) the nature, duration and intensity of the specific stressor; 3) their tolerance to that specific stressor; 4) the extent to which this person is able to integrate their experience into an existing narrative (assimilation) or in a new or altered narrative about the self and the social world (accommodation); and on 5) the availability and use of personal and environmental resources to deal with that stressor. Whatever the outcome, this experience will become part of a person's psychological functioning and thus pre-stressor adjustment for similar stressors in the future. This is illustrated by the arrow from (mal)adaptation back to pre-stressor adjustment in Figure 3.1. Experience with a specific stressor may either help a person to learn to tolerate a similar stressor in the future (upward spiral) or it may cause a person to become more intolerant to that stressor (downward spiral). As people constantly face new stressors and many stressors recur, the process of psychological resilience is a continuous process.

3.3. DISCUSSION

The aim of this chapter was to answer the question by which mechanisms people adapt differently to a stressor. To answer this question, we derived a new dynamic process model of psychological resilience – the Psychological Immunity-Psychological Elasticity (PI-PE) model – from the existing literature regarding the crucial elements in resilience process models and the literature regarding (mal)adaptive outcomes following stressful events or circumstances. In this chapter, we defined psychological resilience as a dynamic process that is triggered by a specific stressful event/circumstance and that is aimed at either enhancing or maintaining psychological functioning – via the pathway of psychological immunity – or aimed at restoring or altering psychological functioning – via the pathway of psychological elasticity. In these pathways, the core mechanisms that distinguish between resilience and non-resilience are tolerance and narrative construction. The PI-PE model explains that people adapt differently to a specific stressor because they differ with respect to their pre-stressor adjustment, the nature, duration and intensity of a specific stressor, their tolerance to that stressor, the personal narrative they construct to make sense of the experience and find closure, and the availability and use of personal and environmental resources. In this chapter, we explained the meaning of these different elements of the PI-PE model (see also Table 3.1). In short, people adapt differently to a stressor because they differ with respect to the temporally related elements in the dynamic process of psychological resilience, depicted in the PI-PE model.

The PI-PE model makes a clear distinction between the capacity for resilience and the demonstration of resilience (a distinction emphasized by Britt et al., 2016). Both are important in the process of psychological resilience. In the pathway of psychological immunity, people are considered resilient as their pre-stressor adjustment is robust enough to tolerate a specific stressor. In this pathway, pre-stressor adjustment is considered as the capacity for resilience and tolerance as the demonstration of resilience. In the pathway of psychological elasticity, people are considered resilient if they are able to construct a personal narrative that enables them to adapt to a stressor. In this pathway, narrative construction is considered as the capacity for resilience and positive adaptation as the demonstration of resilience. By distinguishing between a person's capacity for and demonstration of resilience, the PI-PE model can be understood as a cognitive-behavioural model. However, this conception is too simple as the PI-PE model does not regard a person's psychological process in isolation, but acknowledges that the whole process is embedded in a specific person-environment interaction. Therefore, we regard the PI-PE model as a *biopsycho-ecological* model.

The PI-PE model assumes that psychological immunity can only be acquired for specific stressors, not for stressors in general. Therefore, the stressor needs to be specified.

When encountering a specific stressor for the first time, the PI-PE model assumes that it is unlikely that people respond by demonstrating tolerance because intolerance is considered as the 'default' response (Van Doorn, 2015). However, tolerance can be acquired over time by successfully dealing with that stressor. As stressors are part of daily (work)life, it is very likely that people have learned to adapt to many stressors in their lives already, often without even realizing it. As different stressors could be simultaneously present, it is very likely that people are involved in several resilience processes which may hinder the process of adapting to one specific stressor. In addition, people do not start with a clean slate. In their childhood, they may have been confronted with 'toxic' adverse childhood experiences (ACEs; Felitti et al., 1998) and have developed maladaptive narratives to cope with certain stressors (Young, Klosko, & Weishaar, 2003). As stressors are constantly present, recurring and personal, the process of psychological resilience is also constantly present, recurring and personal, requiring our continuous attention and effort.

The added value of the PI-PE model is, that it establishes a link between research regarding psychological resilience (e.g. Bonanno et al., 2015; Masten, 2014), regarding coping under stress (e.g. Lazarus & Folkman, 1984), and regarding posttraumatic growth (e.g. Tedeschi & Calhoun, 2004). These three research domains focus on how people adapt to adverse and stressful circumstances. The main difference is, that research regarding resilience and posttraumatic growth – by definition – focuses on positive outcomes after stressor exposure, while the outcome in stress-coping research may be either positive or negative (Fletcher & Sarkar, 2013). Resilience and posttraumatic growth research differ with respect to the type of positive outcome: posttraumatic growth research focuses on growth or transformation after exposure to a stressor, while resilience research is more focused on maintaining or recovering to normal daily functioning after stressor exposure (Levine, Laufer, Stein, Hamama-Raz, & Solomon, 2009; Zautra, Hall, et al., 2010). By introducing the concepts of tolerance and narrative construction, the PI-PE model not only combines the different (mal)adaptive outcomes into one model, but also clarifies by which mechanisms or pathways people arrive at different (mal)adaptive outcomes.

3.3.1. Limitations

In this chapter, we make a strong argument for the PI-PE model. It is grounded in a large body of research regarding resilience, stress and post-traumatic growth. A limitation of the PI-PE model is that it is not a 'ready-to-empirically-test' model. Rather, it should be understood as a comprehensive framework for understanding how the process of psychological resilience works differently for different people, which could inspire both research and practice. The PI-PE model focuses on the psychological process of resilience and not on the physical or physiological process. However, some stressors such as natural

disasters, accidents (external stressors) or physical illness (internal stressor; Stewart & Yuen, 2011) affect a person both psychologically and physically. In these instances, the PI-PE model focuses on the psychological process of adapting to the encountered stressor and considers the physical process as a moderating factor influencing this psychological process.

The PI-PE model is restricted to specific stressors, not stressors in general. When a person encounters several stressors at the same time, different resilience processes get in motion. For example, a person could be facing a negative job review at work and at the same time be facing the loss of a parent at home. Both resilience processes should be treated separately as each process may have a different outcome. At the same time, each process influences the other. The loss should be considered as an environmental factor influencing the adaptation to the negative job review and vice versa. Therefore, in the application of the PI-PE model it is very important to be explicit which stressor a person is facing and which other stressor(s) may possibly influence this process.

3.3.2. Implications for future research

Research has identified many resilience mechanisms that could help explain why people positively adapt to stressors in their (work)life (Fisher et al., 2018). Up until now, research has not answered the question by which mechanisms people arrive at different outcomes after being exposed to a stressor. The PI-PE model is the first model that answers this question by introducing two mechanisms: tolerance and narrative construction. Future research regarding the dynamic process of psychological resilience should take these two mechanisms into consideration. For example, differences can be investigated between employees who demonstrate tolerance to a specific stressor and employees who do not: to what extent do these groups differ with respect to their experience with that stressor? Another line of research is among people who have no experience with a specific stressor: how do they respond to a new stressor and to what extent is intolerance their 'default' response? And what can we learn from people who have (a lot of) experience with a specific stressor: which narratives have they constructed about that stressor and to what extent do these narratives relate to (different) adaptations to that stressor? Answering these research questions would not only provide empirical evidence for the PI-PE model in itself, but also provide new insights as to how people adapt differently to stressors.

3.3.3. Implications for practice

Up until now, research has shown that adult resilience-building programmes vary considerably when it comes to the programme approach (e.g. Leppin et al., 2014; Macedo et al., 2014; Robertson, Cooper, Sarkar, & Curran, 2015). The PI-PE model contributes to

more clarity about the best approach to enhance resilience. From the PI-PE model, two main approaches can be derived: programmes aimed at enhancing tolerance to a specific stressor (*tolerance-enhancement approach*) and programmes aimed at helping people to construct narratives that help them to adapt to a specific stressor (*narrative approach*). Programmes using one of these approaches may appear under different names. For example, programme using a tolerance-enhancement approach may appear as 'stress inoculation' or 'stress exposure training' (e.g. Meichenbaum, 1985) and '(emergency) preparedness training' (e.g. Qureshi, Merrill, Gershon, & Calero-Breckheimer, 2002). Programmes using a narrative approach may appear as a 'cognitive-behavioural programme' (e.g. Robertson et al., 2015), as 'debriefing' (e.g. Adler, Bliese, McGurk, Hoge, & Castro, 2011) or as 'critical incident stress debriefing' (e.g. Malcolm, Seaton, Perera, Sheehan, & Van Hasselt, 2005; Mitchell, Sakraida, & Kameg, 2003). It should be noted that these two approaches are only applicable in the case of a specific stressor. In the case of multiple, chronic or unexpected stressors it is best to take a more general resource-based or wellbeing approach, by enhancing personal and environmental resources, such as self-efficacy and social support. This resource-based approach is not uncommon when it comes to resilience building (see Vanhove, Herian, Perez, Harms, & Lester, 2016). Finally, a tolerance-enhancement approach only makes sense in a context where a stressor is recurring and people need to learn to adapt to this stressor over the longer term. This condition makes the PI-PE model very suitable for the work context, where people often need to adapt to recurring work stressors.

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Chapter 4

Psychological resilience-building programmes at work: A systematic review and classification

'The command and control approach is the antithesis of resilience thinking.'[7]

[7] Martin-Breen & Anderies, 2011, p. 54

Psychological resilience-building programmes at work: A systematic review and classification

Abstract

The aim of this chapter is to systematically review to what extent psychological resilience-building programmes are effective in enhancing psychological resilience in a work context. We classified programmes into process-based versus non-process-based. We made this distinction since resilience is currently regarded as a dynamic process and other, non-process-based understandings of resilience are considered outdated. A literature search in peer-reviewed journals up to and including 2018, using the databases PsycINFO and Google Scholar, resulted in 1698 hits. Twenty studies met our inclusion criteria. Only one study investigated the effectiveness of a process-based programme, which was hardly effective in enhancing resilience. Therefore, we know little about the effectiveness of such programmes. Nineteen studies investigated the effectiveness of non-process-based programmes: 42% of these programmes were fully effective, 21% partly effective and 37% not effective in enhancing resilience immediately after the programme ended. Long-term effects were found in three of the six non-process-based studies that investigated these effects. Taken together, we can only draw conclusions about the effectiveness of non-process-based programmes: these can be effective in enhancing resilience in the short- and long-term. Four factors may have positively influenced programme effectiveness: programmes that focus on a specific stressor, use a single programme approach, use an individual mode of delivery and last more than fourteen hours. To advance research regarding the effectiveness of resilience-building programmes at work, the challenge is to develop and investigate programmes consistent with the current process-based understanding of psychological resilience.

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4.1. INTRODUCTION

'Interest in resilience seems to rise in troubled times' (Masten, 2014, p. 3). In the occupational context, two 'troubling developments' have contributed to an emerging interest in psychological resilience, simply defined as the dynamic process of adapting well in the face of a stressor (American Psychological Association, 2020; Luthar, Cicchetti, & Becker, 2000; Infurna & Luthar, 2018; Windle 2011). The first is the 2008 global financial crisis, which affected many employees (Bardoel, Pettit, De Cieri, & McMillan, 2014). The second is the changing world of work (Kossek & Perrigino, 2016), which is increasingly becoming more volatile, uncertain, complex and ambiguous (VUCA; Kinsinger & Walch, 2012). Given these developments, psychological resilience is a promising concept in that people need not necessarily fall victim to stressful and difficult circumstances at work, but could (learn to) adapt to new situations they are facing (Zautra, Hall, & Murray, 2010; Masten, 2014). Resilience is also an appealing concept because it marks a move from 'deficit' models of stress, illness and psychopathology towards a 'strength' model of healthy development in spite of difficult circumstances (Windle, 2011). Because of its promise and appeal, many well-known companies, such as Shell (De Valk, 2013), GlaxoSmithKline (Cooper, Flint-Taylor, & Pearn, 2013), Goldman Sachs (Lebowitz, 2015), Rolls Royce (Roomes, 2018) and the US Army (Cornum, Matthews, & Seligman, 2011) have developed resilience-building programmes for their employees.

To make it worthwhile for companies to invest in or develop resilience-building programmes, it is important to know whether such programmes actually enhance resilience. To date, three systematic reviews have synthesized the evidence regarding the effectiveness of resilience-building programmes in the work context (Fox et al., 2018; Robertson, Cooper, Sarkar, & Curran, 2015; Vanhove, Herian, Perez, Harms, & Lester, 2016). However, these reviews have not to answered this question for two reasons. First, as resilience was not always measured in the included studies, these reviews did not clearly establish whether programmes were indeed effective in enhancing resilience. More often, other variables, such as mental health, were measured without clarifying to what extent these were regarded as 'resilience'. Secondly, the criteria by which 'resilience-building' programmes were selected in each review were so diverse that it rendered the included programmes were not meaningfully comparable. Robertson and colleagues (2015) used the criterion 'the programme itself is specifically resilience-based'. Vanhove and colleagues (2016) used the criterion 'the programme is a primary prevention programme, preventing the negative effects of an anticipated stressor'. Fox and colleagues (2018) used the criterion 'the aim of the programme is to enhance resilience'. Hence, it remains unclear whether resilience-building programmes in the work context actually enhance resilience.

To address both these issues regarding previous reviews, we conducted a systematic review regarding the effectiveness of resilience-building programmes in the work context. First, we used a new set of criteria to select programmes for inclusion (IJntema, Burger, & Schaufeli, 2019). Secondly, we focused exclusively on the effect of these programmes for psychological resilience itself. In addition, we classified programmes into two groups based on how they interpreted psychological resilience, either as a dynamic process or otherwise. We made this distinction because the thinking about psychological resilience has evolved from being regarded as a trait, an outcome or a resource to it now being regarded as a dynamic process that develops over time in specific person-environment interactions (Fisher, Ragsdale, & Fisher, 2018; IJntema et al., 2019). Specific to process-based resilience-building programmes is the factor 'time' that needs to be taken into account (Fisher et al., 2018). Therefore, these programmes can be further divided into three groups: those planned before, during and after stressor occurrence (Chmitorz et al., 2018). Up until now, this classification has not been used in systematic reviews regarding the effectiveness of resilience-building programmes neither in a working population (Fox et al., 2018; Robertson et al., 2015; Vanhove et al., 2016) nor in a more general adult population (Joyce, Shand, Tighe, et al., 2018; Leppin et al., 2014; Macedo et al., 2014). To summarize, the aim of this chapter is to systematically review to what extent process-based versus non-process-based psychological resilience-building programmes in the work context are effective in enhancing psychological resilience.

4.1.1. What is a psychological resilience-building programme?

Any systematic review regarding psychological resilience-building programmes should first clarify what constitutes such a programme. Without clarification it is impossible to determine which programmes are eligible for inclusion. As mentioned before, the previous three reviews regarding the effectiveness of resilience-building programmes in the work context (Fox et al., 2018; Robertson et al., 2015; Vanhove et al., 2016) each used a different criterion to select programmes as resilience-building programmes. As a consequence of using a single criterion, the reviews included programmes that were titled resilience-building programmes, but without actually defining and/or measuring resilience (IJntema et al., 2019). To prevent the current review relying on the 'face validity' of the programme title or a single criterion, we used a new set of criteria, proposed by IJntema and colleagues (2019), ensuring that each of the selected programmes reflects the minimal requirements for resilience-building programmes.

The five criteria for resilience-building programmes are (IJntema et al., 2019): 1) the general aim of the programme is to enhance psychological resilience; 2) the means are offered to enhance psychological resilience; 3) psychological resilience is measured; 4) the concept of psychological resilience is defined; and 5) the stressor that triggers the need

for psychological resilience is specified (these criteria correspond with selection criteria 1, 3, 4, 5 and 6 in Table 4.1, respectively). IJntema and colleagues (2019) derived the first three criteria from previous reviews regarding the effectiveness of resilience-building programmes (e.g. Fox et al., 2018; Joyce, Shand, Tighe, et al., 2018; Robertson et al., 2015; Vanhove et al., 2016). They added criterion 4 because without a definition of the central concept, it is not clear what a resilience-building programme is about. Criterion 5 was added because a stressor is a critical condition for resilience: one must be resilient to or against something. Based on these criteria, we define a psychological resilience-building programme as a programme that provides a clear definition of psychological resilience, aims to enhance it in the context of a specified (combination of) stressor(s), offers the means to do so and measures whether resilience has been enhanced. We use these five criteria to determine which 'resilience-building' programmes to include in the current systematic review (for a more in-depth discussion on criteria for resilience-building programmes, see IJntema et al., 2019).

4.1.2. Do resilience-building programmes enhance psychological resilience?

Previous systematic reviews (Fox et al., 2018; Robertson et al., 2015; Vanhove et al., 2016) have not clearly demonstrated that resilience-building programmes actually enhance *resilience* in a working population. In their meta-analysis (37 studies), Vanhove and colleagues (2016) defined resilience as the factors that promote wellness and protect against the negative effects of stressors, but did *not* examine programme effects for these factors. Rather, they investigated what these factors promote (e.g. wellbeing, performance) or protect against (e.g. psychological deficits). In their reviews (14 and 22 studies, respectively), Robertson and colleagues (2015) and Fox and colleagues (2018) did investigate the impact of resilience-building programmes for resilience, but not exclusively. They also investigated the effect on mental health, physical, psychosocial and performance, without explaining if and how these concepts are related to resilience. If we only consider the effects on resilience scales, both reviews did not convincingly demonstrate that resilience-building programmes are effective in enhancing resilience. A mere five of the fourteen studies included by Robertson and colleagues (2015) measured the impact for resilience; two of these five studies reported a significant positive effect and one a significant negative effect. They conclude that the effect of resilience-building programmes was more conclusive for mental health than for resilience. Ten of the twenty-two studies included by Fox and colleagues (2018) measured the effect for resilience; six of these ten studies demonstrated a significant positive effect for resilience. This indicates that to date, it has not been clearly established that so-called 'resilience-building' programmes are effective in enhancing resilience in a working population.

Even though little evidence is available for working populations, more evidence is available about the effectiveness of resilience-building programmes in a more general adult population, including patients and students (Joyce, Shand, Tighe, et al., 2018; Leppin et al., 2014; Macedo et al., 2014). In their meta-analysis (11 studies), Joyce, Shand, Tighe and colleagues (2018) investigated the effect of resilience-building programmes exclusively for resilience as measured by resilience scales and reported a statistically significant positive post-test effect in eight of the eleven included studies. In their systematic review (13 studies), Macedo and colleagues (2014) investigated the effect of resilience-building programmes both for resilience itself (4 studies) as well as for resilience-related constructs, such as hardiness, coping, self-esteem, locus of control, social support and positive affect (9 studies). The four studies that measured the effect for resilience itself all reported a statistically significant positive post-test effect for resilience. In their meta-analysis (25 studies), Leppin and colleagues (2014) investigated the effect of resilience-building programmes for both resilience itself as well as for resilience-related constructs and wellbeing and found a significant positive post-test effect in six of the seven studies that measured the effect for resilience. These three systematic reviews demonstrate that so-called 'resilience-building' programmes can be effective in enhancing resilience in a general adult population.

4.1.3. Current study

In the current systematic review, our first research question is to what extent process-based versus non-process-based psychological resilience-building programmes are effective in enhancing psychological resilience in the short- and long-term. In addition, in order to explain which ingredients make a programme effective, our second research question is about the core features of these programmes. More specifically, we investigate: a) how psychological resilience was defined; b) how psychological resilience was measured; c) for which type of employees the programmes were intended; d) which job-related stressor(s) these employees were facing; and e) which approach was chosen to enhance psychological resilience, including the duration of the programme and the mode of delivery. In sum, the current review is more than a timely update of the effectiveness of psychological resilience-building programmes as it defines and classifies resilience-building programmes more clearly than previous reviews have done. This different focus could contribute to new insights as to the extent to which psychological resilience-building programmes are effective in enhancing psychological resilience in a working population.

4.2. METHOD

4.2.1. Search strategy

To identify relevant studies, we performed a systematic review of the literature using the electronic databases PsycINFO and Google Scholar. As we were seeking resilience-building programmes in the work context, we used three sets of search terms. The first set of search terms included 'resilience' or 'resiliency' or 'resilient'; the second set included 'programme' or 'intervention' or 'training' or 'coaching'; the last set of search terms were meant to exclude, rather than include studies concerning resilience of families, children and adolescents. For this we used the exclusion terms 'child', 'adolescent', 'parent', 'family', 'school', 'youth' and 'divorce'. In PsycINFO, these terms were searched for in the keywords field which resulted in 700 hits. As this is not an option in Google Scholar, we applied the search terms to title words in this database which resulted in 998 hits. In addition to searching these electronic databases, we manually searched the reference lists of all included studies and the reference lists of a number of systematic reviews on resilience-building programmes (Fox et al., 2018; Helmreich et al., 2017; Joyce, Shand, Tighe, et al., 2018; Leppin et al., 2014; Macedo et al., 2014; Robertson et al., 2015; Vanhove et al., 2016) to identify any studies that we may have missed in the electronic search. Figure 4.1 shows the flowchart of the literature retrieval process. From the 1698 studies that we screened, twenty studies were included in the current review.

4.2.2. Selection criteria

The main selection criteria in the current review were that the resilience-building programme met the five criteria as advised by IJntema and colleagues (2019; selection criteria 1, 3, 4, 5 and 6 in Table 4.1; see also section 4.1.1). As many types of resilience have been studied in many different contexts (Kimhi, 2016; Martin-Breen & Anderies, 2011), we limited ourselves to *psychological* resilience in the work context (see selection criteria 2 and 7 in Table 4.1) which does not include biological types of resilience, such as physical and physiological resilience (IJntema et al., 2019). Occasionally, we were required to infer from the content of the study that psychological resilience was the topic of interest because not all included studies specified the type of resilience or they used related terms, such as 'emotional', 'cognitive' or 'individual' resilience. In addition, we restricted our search to original papers in peer-reviewed scientific journals written in the English language up until and including December 2018 (see selection criterion 10, 9 and 11 in Table 4.1, respectively). All inclusion and exclusion criteria are shown in Table 4.1.

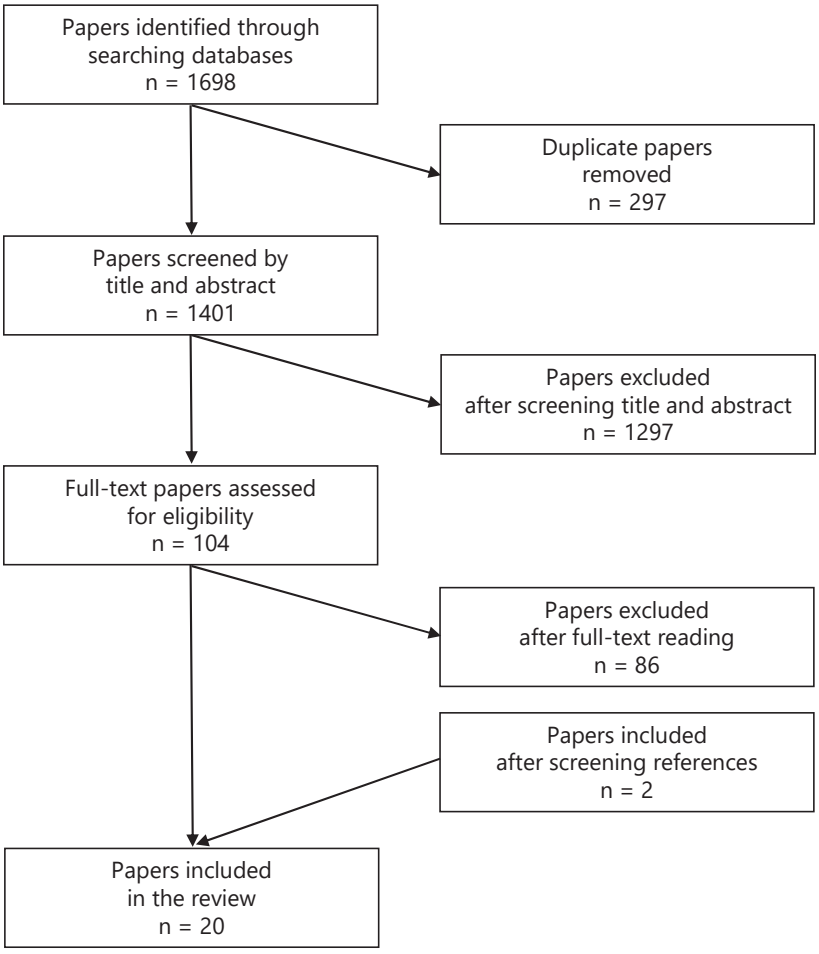

Figure 4.1. *Flow chart of search results*

Table 4.1. *Inclusion and exclusion criteria*

	Inclusion criteria	Exclusion criteria
1.	The aim of the programme is to enhance resilience.	Enhancing resilience is not the general aim of the programme.
2.	The type of resilience is psychological resilience or the psychological part of individual resilience.	Other types of resilience, such as physical, physiological, social, team or organizational resilience; resilience-related concepts, such as hardiness and mental toughness.
3.	The means are offered to enhance resilience.	No means are offered to enhance resilience or the means are offered to enhance something but not resilience.
4.	The concept of resilience is defined.	The concept of resilience may be used in the programme title, but is not defined.
5.	Resilience is measured before and after the programme, using a standardized measure.	Concepts related to resilience (stress, wellbeing, etc.) are measured, but authors do not clarify how these concepts are operationalizations of resilience; resilience is measured only once, either before or after the programme; self-developed items are used, rather than a standardized scale.
6.	The stressor that triggers the need for resilience is specified.	The stressor is not specified.
7.	Programme participants are employees (> 18 years old).	Programme participants are students, patients, parents or children.
8.	Between or within group effect studies (experimental design).	Descriptive (case) studies (qualitative research); correlational studies.
9.	Research published in English language.	Research published in languages other than English.
10.	Peer-reviewed papers.	Non peer-reviewed papers, conference papers, theses, books, book chapters.
11.	Papers up to and including December 2018.	Papers from 2019 onward.

4.2.3. Analysis

We analysed 1698 papers using Rayyan, a web application for systematic reviews (Ouzzani, Hammady, Fedorowicz, & Elmagarmid, 2016). After removing 297 duplicates, the first author screened the title and abstract of 1401 papers. In ambiguous cases, full-text papers were read (n = 104) and discussed with the co-authors. Twenty studies met all inclusion criteria (see Table 4.1). The most common reasons for the exclusion of records on the basis of title/abstract screening were: 1) publication type, e.g. a book; 2) population, e.g. students or patients; 3) study design, e.g. a qualitative or correlational study; or 4) type of resilience, e.g. community or disaster resilience. In most cases, full-text screening of papers was necessary to determine whether the programme concerned a resilience-building programme according to the criteria advised by IJntema and colleagues (2019). In the

results section, we will present the results in a narrative and tabular form. We first classify programmes in the included studies into process-based versus non-process-based resilience-building programmes, and into before, during and after stressor exposure. Then, we summarize and describe the extent to which these groups of programmes were effective in enhancing resilience. Finally, we compare the features of these programmes.

4.3. RESULTS

4.3.1. Preliminary remark

In the current review, twenty studies were included (see the asterisks in the reference list). Of these studies, eight were published in 2018, two in 2017, three in 2016, one in 2015, two in 2014, one in 2013, two in 2011 and one in 2010 (see Table 4.2). In contrast to earlier systematic reviews, we excluded studies in which the authors did not provide a definition of psychological resilience, did not specify the stressor(s) that triggered the need for resilience or did not clarify how they operationalized psychological resilience. Based on these criteria alone, we excluded twenty-two studies: four studies that did not provide a definition of resilience (Carr et al., 2013; Chesak et al., 2015; Sood, Sharma, Schroeder, & Gorman, 2014; Van Agteren, Iasiello, & Lo, 2018); seven studies that did not measure resilience (Abbott, Klein, Hamilton, & Rosenthal, 2009; Jafarizadeh, Zhiyani, Aghakhani, Alinejad, & Moradi, 2017; Lynch et al., 2016; McCraty & Atkinson, 2012; Mistretta et al., 2018; Pipe et al., 2012; Weltman, Lamon, Freedy, & Chartrand, 2014); eight studies that did not define and measure resilience (Andersen et al., 2015; Andersen, Dorai, Papazoglou, & Arnetz, 2016; Arnetz, Nevedal, Lumley, Backman, & Lublin, 2009; Ingham, Riley, Nevin, Evens, & Gair, 2013; Jennings, Frank, Snowberg, Coccia, & Greenberg, 2013; Liossis, Shochet, Millear, & Biggs, 2009; Millear, Liossis, Shochet, Biggs, & Donald, 2008; Potter et al., 2013); and three studies that did not report a stressor (Burton, Pakenham, & Brown, 2010; Magtibay, Chesak, Coughlin, & Sood, 2017; Waite & Richardson, 2004).

4.3.2. Impact of process-based versus non-process-based resilience-building programmes

To compare the effectiveness of process-based versus non-process-based programmes, we first classified programmes into these groups based on how each study defined and measured resilience. Table 4.2 outlines the definition and measurement of resilience in the included studies. As can be seen from this table, four studies defined resilience as a dynamic process (Foster et al., 2018; Joyce, Shand, Bryant, Lal, & Harvey, 2018; Kinman & Grant, 2017; Slayter, Craigie, Heritage, Davis, & Rees, 2018) and the other sixteen studies defined it from a non-process-based perspective (e.g. a trait, ability, capacity, outcome,

protective factor). Only one of the four process-based studies also measured resilience as a process (Foster et al., 2018) using the Workplace Resilience Inventory (WRI), which is based on the general conceptual model of resiliency (McLarnon & Rothstein, 2013). This implies that – based on the definition and measurement of resilience – we found only one process-based programme and nineteen non-process-based resilience-building programmes.

Table 4.3 outlines the design of the included studies and the study outcomes. This table shows that the study investigating the effectiveness of the only process-based programme (Foster et al., 2018) showed a significant positive immediate effect for one of the eight subscales of the WRI. No follow-up effects were found. This implies that this programme was not very effective in enhancing resilience. However, the programme was effective in immediately reducing anxiety and enhancing coping self-efficacy. As we found only one process-based resilience-building programme, we were unable to make a subdivision into programmes planned before, during and after stressor exposure.

The other nineteen studies in Table 4.3 investigated the effectiveness of non-process-based programmes. Eight of these studies (42%) demonstrated a significant direct effect for all resilience measures (Babanataj, Mazdarani, Hesamzadeh, Gorji,& Cherati, 2018; Baum et al., 2018; Chitra & Karunanidhi, 2018; Sherlock-Storey, Moss, & Timson, 2013; Sood, Prasad, Schroeder, & Varkey, 2011; Stoiber & Gettinger, 2011; Tenhula et al, 2014; Werneburg et al., 2018); four studies (21%) for some, but not all resilience measures (Kinman & Grant, 2017; Maunder et al., 2010; Rogerson, Meir, Crowley-McHattan, McEwen, & Pastoors, 2016; Van der Meulen et al., 2017) and the remaining studies (37%) for none of the resilience measures. In addition, six of the nineteen studies investigated follow-up effects, ranging from three to nine months. Three of these studies demonstrated a significant follow-up effect, either for all resilience measures (Chitra & Karunanidhi, 2018; Werneburg et al., 2018) or for two of four resilience measures (Slayter et al., 2018); two studies did not show a significant follow-up effect (Christopher et al., 2018; Van der Meulen et al., 2017); and one study did not provide information on the follow-up effect (Ramey et al., 2016). On balance, these results indicate that non-process-based resilience-building programmes can be effective in enhancing resilience in the short-term and long-term. The type of design – within-group, between-group and/or randomized controlled – had no distinctive impact on programme effectiveness.

Table 4.2. *Definitions and operationalizations of resilience as reported by the authors of the included studies (process-based study is shaded grey)*

Author(s)	Definition: ***Resilience is*** …	Operationalization of resilience
Babanataj et al., 2018	*the 'individuals' positive capacity to cope with the stresses and catastrophes that involves the individuals' ability to restore the initial balance after an interruption or failure* (Scholes, 2008)' (p. 1)	Connor-Davidson Resilience Scale (25-items; CD-RISC25; Connor & Davidson, 2003)
Baum et al., 2018	*'the ability to establish and maintain a healthy and stable pattern of adjustment following an aversive event* (Bonanno, 2012; Ungar, 2013)' (p. 187)	• Connor Davidson Resilience Scale (10-items; CD-RISC10; Campbell-Sills & Stein, 2007) • Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski & Kraaij, 2006) • Perceived Ability to Cope with Trauma (PACT; Bonanno, Pat-Horenczyk, & Noll, 2011)
Chitra & Karunanidhi, 2018	*'a multidimensional characteristic that embodies the personal qualities that enable one to thrive in the face of adversity* (Connor & Davidson, 2003)' (p. 13)	CD-RISC25
Christopher et al., 2018	*'characteristics that allow individuals to cope with adversity'* (p. 107)	CD-RISC25
Foster et al., 2018	*'a process of recovery from adversity where adaptive responses lead to positive well-being outcomes* (King & Rothstein, 2010)' (p. 1471)	Workplace Resilience Inventory (WRI; McLarnon & Rothstein, 2013)
Joyce, Shand, Bryant, et al., 2018	*'process of bouncing back from difficult experiences and adapting well in the face of adversity, trauma, tragedy, threats or significant sources of stress* (APA, 2016)' (p. 2)	CD-RISC10
Kinman & Grant, 2017	*'a dynamic interplay between personal characteristics and the effective utilization of support from various sources* (Grant & Kinman, 2013)' (p. 1981)	• Emotional self-efficacy (Choi, Kluemper, Sauley, 2013) • Groningen Reflective Ability Scale (Aukes, Geertsma, Cohen-Schotanus, Zwierstra, & Slaets, 2007) • Self-Compassion Scale-short form (SCS-SF; Raes, Pommier, Neff, & Van Gucht, 2011) • Professional Quality of Life Scale (Hudnall-Stamm, 2010)
Maunder et al., 2010	*'overcoming stress or adversity or, more precisely, as having a good outcome after an adverse experience* (Rutter, 1985)' (p. 2)	• Confidence in training and support (adapted from Maunder, 2004) • Pandemic Self-Efficacy Scale (Maunder et al., 2010) • Inventory of Interpersonal Problems (IIP-32; Horowitz, Rosenberg, Baer, Ureño, & Villaseñor, 1988) • Ways of Coping Inventory (Folkman & Lazarus, 1980)

Mealer et al., 2014	*'a trait or capacity, … can be learned and … one of the most important factors in successful adaptation following exposure to a traumatic event* (Charney, 2004)*'* (p. e98)	CD-RISC25
Mehta et al., 2016	*'the capacity of a dynamic, malleable system to withstand challenges to its stability, viability, or development'* (p. 604)	Generalized Self-Efficacy Scale (GSES; Schwarzer & Jerusalem, 1995)
Ramey et al., 2016	*'the capacity to prepare for, recover from, and adapt in the face of stress, adversity, trauma or challenge* (McCraty & Atkinson, 2012)*'* (p. 796)	Response to Stressful Experiences Scale (RSES; Johnson et al., 2011)
Rogerson et al., 2016	*'the ability to positively adapt to adversity* (Fletcher & Sarkar, 2013)*'* (p. 329).	Resilience at Work scale (RAW; Winwood, Colon, & McEwen, 2013)
Sherlock-Storey et al., 2013	*'when beset by problems and adversity sustaining and bouncing back and even beyond to attain success* (Luthans, Avolio, Avey, & Norman, 2007)*'* (p. 22)	Resilience scale of Psychological Capital Questionnaire (Luthans, Avolio, Avey, & Norman, 2007)
Slayter et al., 2018	*'the process of adapting well in the face of adversity, trauma, tragedy, threats or significant sources of stress* (APA, 2015)*'* (p. 2)	• CD-RISC10 • GSES • SCS-SF • WHO Well-being Index (WHO-5; Bech, 1998)
Sood et al., 2011	*'the ability of an individual to withstand adversity* (Connor & Davidson, 2003)*'* (p. 858)	CD-RISC25
Stoiber & Gettinger, 2011	*'positive adaptation or "bounce back" when faced with difficulties and cope effectively* (Luthar, 2000; Merrell, Levitt, & Gueldner, 2010)*'* (p. 687)	• Competency Self-Ratings (CSR; adapted from Gettinger, Stoiber, & Koscik, 2008) • Accommodating Children with Challenging Behavior (ACCB; adapted from Gettinger et al., 2008) • Observer Rating of Ecobehavioral Variables Scale (OREVS; Chandler, Dahlquist, Repp, & Feltz, 1999)
Tenhula et al., 2014	*'the ability to bounce back or recover from stress* (Smith et al., 2008)*'* (p. 420)	Brief resilience Scale (BRS; Smith et al., 2008)
Van der Meulen et al., 2017	*'being able to perform under stress and not affected by its potentially harmful consequences'* (p. 1)	• Mental Toughness Questionnaire (MTQ-48; Clough, Earle, & Sewell, 2002) • Resilience Scale-NL (RS-NL; Portzky, 2008)
Weidlich & Ugarriza, 2015	Several definitions are discussed, among others: *'a person's mental capacity to face adversity'* (p. 291).	• CD-RISC25
Werneburg et al., 2018	*'one's ability to recover from adversity and setbacks'* (p. 40)	• CD-RISC25

Table 4.3. *Research design and outcomes of included studies (abbreviations of scales are explained in Table 4.2; process-based study is shaded grey)*

Author(s)	Design (group x time)	N#	Type of analysis	Post-test outcomes (significance, effect size)	Follow-up outcomes
Babanataj et al., 2018	1 x 2	30 (n.a.)	Paired t-test	↑ CD-RISC25***	n.a.
Baum et al., 2018	1 x 2	49 (n.a.)	MANOVA	↑ CD-RISC10***; d = 0.55 ↑ CERQ***; d = 0.52 ↑ PACT***; d = 0.61	n.a.
Chitra & Karunanidhi, 2018	2 x 3 RCT[1]	26 (25[a])	RM-ANOVA	↑ CD-RISC25#	↑ CD-RISC25#
Christopher et al., 2018	2 x 3 RCT[2]	24 (25[a])	Multi-level modelling	n.s. CD-RISC25; d = 0.64	n.s. CD-RISC25
Foster et al., 2018	1 x 3[2]	24 (n.a.)	RM-ANOVA	n.s. Affective personal characteristics (APC); r = 0.04 n.s. Behavioural personal characteristics (BPC); r = 0.31 n.s. Cognitive personal characteristics (CPC); r = 0.22 n.s. Affective self-regulation (ASR); r = 0.11 ↑ Behavioural self-regulation (BSR)*; r = 0.38 n.s. Cognitive self-regulation (CSR); r = 0.34 n.s. Initial Responses (IR); r = 0.17 n.s. Opportunities, Supports, Resources (PSR); r = 0.12	n.s. APC; r = 0.03 n.s. BPC; r = 0.10 n.s. CPC; r = 0.18 n.s. ASR; r = 0.27 n.s. BSR; r = 0.14 n.s. CSR; r = 0.10 n.s. IR; r = 0.08 n.s. PSR; r = 0.09
Joyce, Shand, Bryant, et al., 2018	1 x 2	15 (n.a.)	Paired t-test	n.s. CD-RISC10; effect size of 0.5	n.a.
Kinman & Grant, 2017	2 x 2 NRS	25 (31[b])	RM-MANOVA; t-test for separate scales	↑ Emotional self-efficacy ***; d = 0.88 ↑ Reflective ability*; d = 0.08 ↑ Self-compassion**; d = 0.57 ↑ Compassion satisfaction**; d = 0.54 n.s. Compassion fatigue; d = 0.42	n.a.
Maunder et al., 2010	1 x 2	127 (n.a.)	Paired t-test	↑ Pandemic self-efficacy*** ↑ Confidence in training and support*** ↓ Interpersonal problems*** n.s. Coping	n.a.
Mealer et al., 2014	2 x 2 RCT	13 (14[a])	RM-ANOVA	n.s. CD-RISC25	n.a.
Mehta et al., 2016	1 x 2	15 (n.a.)	Wilcoxon signed-rank test	n.s. GSES; d = 0.30	n.a.

Ramey et al., 2016	1 x 3[3]	36 (n.a.)	Paired t-tests	n.s. RSES; d = 0.04	No information
Rogerson et al., 2016	2 x 2 RCT	13 (14[b])	RM-ANOVA	↑ RAW total n.s. Living authentically ↑ Finding your calling** d = 0.9 ↑ Maintaining perspective*** d = 1.0 ↑ Managing stress** d = 1.0 ↑ Interacting cooperatively* d = 0.8 ↑ Staying healthy** d = 1.0 n.s. Building networks	n.a.
Sherlock-Storey et al., 2013	1 x 2	12 (n.a.)	Paired t-test	↑ Resilience**	n.a.
Slayter et al., 2018	2 x 2 NRS[3] (follow-up only within-group; n = 42)	60 (16[b])	GLMM	n.s. CD-RISC10 n.s. GSES n.s. SCS-SF n.s. WHO-5	n.s. CD-RISC10 n.s. GSES ↑ SCS-SF**; d = 0.05 ↑ WHO-5*; d = 0.39
Sood et al., 2011	2 x 2 RCT	20 (12)	T-test change scores	↑ CD-RISC25**; d = 1.16	n.a.
Stoiber & Gettinger, 2011	2 x 2 RCT-C	35 (35[a])	MANCOVA	↑ CSR*** ↑ ACCB**; η^2 = .69 ↑ OREVS***; η^2 = .67	n.a.
Tenhula et al., 2014	1 x 2	186 (n.a.)	RM- MANOVA	↑ BRS***; d = 0.35	n.a.
Van der Meulen et al., 2017	2 x 3 NRS[4]	138 (167[a])	Mixed model	n.s. MTQ-48 (including 'challenge' and 'commitment') ↑ interpersonal confidence**; d = 0.22 n.s. RS-NL (including subscales)	n.s. MTQ-48 n.s. RS-NL
Weidlich & Ugarriza, 2015	1 x 2	28 (n.a.)	Paired t-test	n.s. CD-RISC25	n.a.
Werneburg et al., 2018	1 x 3[3]	119 (n.a.)	Paired t-test	↑ CD-RISC25**; d = .99	↑ CD-RISC25***; d = 1.22

N experimental group (N comparison group)
↑ enhanced; ↓ reduced; n.s. = not significant
* p < .05; ** p < .01; *** p < .001; # p value not reported
NRS = non randomized controlled study; RCT = randomized controlled trial; RCT-C = randomized classrooms
[1] 2-month follow-up; [2] 3-month follow-up; [3] 6-month follow-up; [4] 9-month follow-up
[a] no programme control group; [b] waitlist control group

Seventeen of the nineteen non-process-based studies not only measured resilience, but also other variables, mostly mental health outcomes. Twelve of these seventeen studies showed significant immediate effects, concerning reduced perceived stress (Babanataj et al., 2018; Chitra & Karunanidhi, 2018; Kinman & Grant, 2017; Mehta et al., 2016; Sood et al., 2011; Werneburg et al., 2018), reduced anxiety (Sood et al., 2011; Werneburg et al, 2018), reduced distress (Tenhula et al., 2014), reduced depression (Mealer et al., 2014; Slayter et al., 2018), reduced burnout (Christopher et al., 2018; Slayter et al., 2018; Weidlich & Ugarizza, 2015), enhanced quality of life (Sood et al., 2011, Werneburg et al., 2018), enhanced psychological wellbeing and job satisfaction (Chitra & Karunanidhi, 2018), enhanced hope, optimism and change efficacy (Sherlock-Storey et al, 2013) and enhanced social problem solving (Tenhula et al., 2014). One study found a significant reduction in blood sugar level (HbA1C; Ramey et al., 2016). Another study did not find any significant results, not for resilience and not for other outcomes (Joyce, Shand, Bryant, et al., 2018). In sum, these results first show that all but one of the non-process-based programmes found a programme effect for resilience, for mental health and/or for a physiological measure. Secondly, these results demonstrate that as many studies (63%) showed a programme effect for mental health as for resilience.

4.3.3. Features of resilience-building programmes

4.3.3.1. Definition of resilience

As can be seen from Table 4.2, all included studies used different definitions of psychological resilience. This was to be expected, as there is no single agreed upon definition of psychological resilience (Aburn, Gott, & Hoare, 2016). Only two studies used identical definitions (Joyce, Shand, Bryant, et al., 2018; Slayter et al., 2018). Similarities between definitions are that all but one (Kinman & Grant, 2017) include both a stressor and a response or adaptation to that stressor which reflects current thinking that both stressor(s) and positive adaptation are linked to resilience (Fisher et al., 2018). Definitions differed with respect to the conceptualization of resilience (trait, ability, capacity, outcome, protective factor, process), the severity of the stressor (challenge, difficulties, adversity, trauma, catastrophe) and/or the type of response or adaptation (withstand, recover, restore, bounce back, cope).

4.3.3.2. Measurement of resilience

To measure psychological resilience, 24 different scales were used. This diversity reflects a lack of clarity regarding the assessment of resilience and the absence of a 'gold standard' for measuring resilience (Ayed, Toner, & Priebe, 2019; Windle, Bennett, & Noyes, 2011). Only one scale measured resilience as a dynamic process: the Workplace Resilience

Inventory (WRI; McLarnon & Rothstein, 2013). Most used was the Connor-Davidson Resilience Scale (CD-RISC): seven studies used the 25-item version (Connor & Davidson, 2003) and three studies used the 10-item version (Campbell-Sills & Stein, 2007). The CD-RISC is the most widely used scale to measure resilience (Salisu & Hashim, 2017) and has acceptable psychometric properties (Pangallo, Zibarras, Lewis, & Flaxman, 2015; Salisu & Hashim, 2017). Both the Generalized Self-Efficacy Scale (GSES; Schwarzer & Jerusalem, 1995) and the Self-Compassion Scale-short form (SCS-SF; Raes, Pommier, Neff, & Van Gucht, 2011) were used twice as operationalizations of resilience. The remaining scales were used only once. Two scales were specifically developed for the work context: the WRI (McLarnon & Rothstein, 2013) and the Resilience at Work Scale (RAW; Winwood, Colon, & McEwen, 2013). All studies used self-report scales, one study additionally employed other ratings (Stoiber & Gettinger, 2011).

The scales used in the included studies can be categorized as either 'typical' or 'atypical' scales. Typical scales are by design intended to measure resilience and carry the title 'resilience' scale (Windle et al., 2011). Atypical scales are presented by the authors as 'resilience' scales, but are not called as such. Three-quarters of the included studies employed a typical scale: CD-RISC, Brief Resilience Scale, Resilience Scale-NL, WRI, RAW and the resilience scale of the Psychological Capital Questionnaire (see Table 4.2). Three of these studies additionally used atypical scales (Baum et al., 2018; Slayter et al., 2018; Van der Meulen et al., 2017), for example, the GSES and the Mental Toughness Questionnaire (MTQ-48; Clough, Earle, & Sewell, 2002). The remaining studies (25%) only used atypical scales to measure resilience (Kinman & Grant, 2017; Maunder et al., 2010; Mehta et al., 2016; Ramey et al., 2016; Stoiber & Gettinger, 2011). Although many different scales have been used, these results show that typical resilience scales have been used the most. For programme effectiveness, it did not make a difference which scale was used.

4.3.3.3. Characteristics of participants

Table 4.3 shows that sample sizes ranged from 12 to 186 participants. Table 4.4 outlines the type of participants in each resilience-building programme, their mean age, gender and the country where they worked. As can be seen in this table, participants were healthcare service professionals in half of the included studies (e.g. nurses, physicians, social workers), professionals in high-risk professions in 30% of the studies (e.g. police officers, firefighters) and teachers in 10% of the studies. The common denominator among these professionals is that all work in occupations ranked high in their need for resilience (Kossek & Perrigino, 2016). The remaining two studies had participants that did not work in such occupations. They were managers (Sherlock-Storey et al., 2013) and employees in a power distribution company (Rogerson et al., 2016). Both of these studies demonstrated post-test effects for one or more resilience measures which supports the notion that

resilience may be critical to employees in *all* occupations, also occupations ranked lower in need of resilience (Kossek & Perrigino, 2016). The difference may be that employees in high-ranked occupations are more required to tolerate stress and show persistence in the face of adversity on a daily basis than employees in low-ranked professions. In addition to the type of participants, eleven studies provided information on their mean age which ranged from 27 to 48 years with an average of 41 years. Eighteen studies provided information on the percentage of females in the programme which ranged from 3% to 100% with an average percentage of 62% females. Participants worked in nine different countries: USA (nine studies), Australia (four studies), United Kingdom (two studies), Canada (one study), India (one study), Iran (one study), Israel (one study) and The Netherlands (one study).

4.3.3.4. Characteristics of stressor

Table 4.4 also lists the kind of stressor(s) participants faced. As can be seen from this table, five studies describe a specific stressor, however, each one a distinct stressor: organizational change (Rogerson et al., 2016; Sherlock-Storey et al., 2013), pandemic influenza (Maunder et al., 2010), challenging behaviour of children (Stoiber & Gettinger, 2011) and observing serious injuries in soldiers (Weidlich & Ugarriza, 2015). Four of these five studies (80%) demonstrated significant post-test effects for one or more resilience measures. The remaining fifteen studies in Table 4.4 did not describe a specific stressor, but multiple coinciding job-related stressors. Except for one (Maunder et al., 2010), all programmes were carried out while participants were exposed to these stressor(s). Nine of the fifteen studies (60%) demonstrated significant post-test effects. These results indicate that the type of stressor (specific or non-specific) may play a role in the effectiveness of resilience-building programmes.

4.3.3.5. Programme approach

Table 4.5 outlines the features of the resilience-building programmes under review. All programmes were aimed at enhancing resilience, which was an inclusion criterion. As can be seen from Table 4.5, additional goals were also formulated, such as enhancing wellbeing, reducing stress or enhancing specified resilience factors (e.g. self-efficacy, social support). The mode of delivery was mostly group-based: 70% of the programmes consisted of only group-based sessions, 10% combined group and one-on-one sessions, 10% consisted of only one-on-one sessions and 10% were computer-based. Ten of the fourteen group-based programmes demonstrated a significant post-test effect for resilience measures. One of the two combined programmes and both individual-based programmes demonstrated an effect as well. Both computer-based programmes did not demonstrate an effect.

In nineteen studies, the programme length was reported or we estimated it based on the number of sessions (see Table 4.5). The programme length ranged from a single one or two hours session (Sood et al., 2011; Weidlich & Ugarriza, 2015) to a twelve weeks programme of at least 50 hours, including educational workshops, written exposure therapy sessions, mindfulness exercises, aerobic exercises and counselling sessions (Mealer et al., 2014). The average programme length was about 14 hours. The duration of the programme may have influenced programme effectiveness: 75% of the programmes with a duration of > 14 hours demonstrated significant post-test effects for one or more resilience measures compared to 55% of the programmes with a duration of ≤ 14 hours.

Forty percent of the programmes adopted a single approach (skills-based, educational, biofeedback or problem-solving) and 60% a mixed approach. Our study indicates that the former may be more effective: 88% of the single-approach programmes demonstrated significant post-test effects for one or more resilience measures compared to 50% of the mixed approach programmes.

4.3.3.6. Intra-programme consistency

To ensure content validity, the way psychological resilience is defined, measured and enhanced in a programme should be consistent. When it comes to consistency between definition and measurement, 35% of the included studies seem to be consistent: they defined and measured resilience either as a personal resource (Baum et al., 2018; Christopher et al., 2018; Chitra & Karunanidhi, 2018; Sood et al., 2011; Werneburg et al., 2018) or as an outcome (Tenhula et al. 2014) or as a process (Foster et al., 2018). Consistency could not be determined for one study (Weidlich & Ugarriza, 2015) because multiple definitions of resilience were given. One study did not provide a precise enough definition to determine whether they conceptualized resilience as a resource or as an outcome (Van der Meulen et al., 2017). The eleven remaining studies did not properly operationalize resilience: one of these studies measured self-efficacy, but did not define resilience as such (Mehta et al., 2016); two studies conceptualized psychological resilience as a process and measured it as a personal characteristic (Joyce, Shand, Bryant, et al., 2018; Slayter et al., 2018); three studies used two different conceptualizations in their definition of resilience and measured only one: capacity/ability (Babanataj et al., 2018), trait/ability (Mealer et al., 2014) and ability/process (Rogerson et al., 2016); two studies defined resilience as an outcome, but operationalized it either as a resource (Sherlock-Storey et al., 2013) or as both an outcome and a resource (Stoiber & Gettinger, 2011); one study defined resilience as both the capacity to prepare for and the response to a stressor, but measured only the response (Ramey et al., 2016); one study defined resilience as the dynamic interplay between personal characteristics and the utilization of support, but measured only personal characteristics (Kinman & Grant, 2017). Only one study (Maunder et al., 2010)

Table 4.4. *Programme participants: mean age, percentage of females, stressor(s) and country of work (process-based study is shaded grey)*

Author(s)	Participants	Mean age	% Female	Stressor(s)	Country
Babanataj et al., 2018	Intensive care unit nurses	35	77%	Intensive care nursing stressors, such as working relationships, communications with patients and their family, complicated and noisy equipment, high workloads, the heavy burden of patients' care.	Iran
Baum et al., 2018	Upper school teachers	-	51%	Day-to-day stressors of teaching and additional stressors related to traumatic events in the classroom, school or community (e.g. rocket attacks, housing demolitions, poverty, domestic violence, accidents).	Israel
Chitra & Karunanidhi, 2018	Female police officers with low resilience levels	27	100%	Female police officers stressors, such as higher levels of harassment, bias, underestimation of physical abilities, discrimination, hostile work environment and other stressors inherent to police work.	India
Christopher et al., 2018	Law enforcement officers	45	10%	Police officer acute and chronic stressors, such as critical incidents, violence, public scrutiny, interpersonal challenges.	USA
Foster et al., 2018	Registered mental health nurses	60% ≥ 40 years	71%	Mental health nursing stressors, such as violence or abuse and workload demands.	Australia
Joyce, Shand, Bryant, et al., 2018	Firefighters	44	3%	Work-related challenges.	Australia
Kinman & Grant, 2017	Newly qualified social workers employed in children's services	35	77%	Heavy and complex workloads and emotional demands inherent in social work.	UK
Maunder et al., 2010	Healthcare workers	-	86%	Influenza pandemic.	Canada
Mealer et al., 2014	Intensive care unit nurses	-	92%	Intensive care unit stressors, such as high patient mortality and morbidity, daily confrontations with ethical dilemmas, and a tension-charged atmosphere.	USA
Mehta et al., 2016	Palliative care providers (physicians, nurses, social workers)	44	80%	Palliative care work stressors, such as exposure to death and loss, time pressures, unpredictable schedules, increasing workload, and competing role demands.	USA
Ramey et al., 2016	Law enforcement officers	41	24%	Chronic police work stressors, such as critical incidents (e.g. threats of danger, homicides, death, accidents) and organization pressures (e.g. extended work hours, shift work, rigid organizational structure).	USA

Rogerson et al., 2016	Employees of power distribution company	-	-	Downsizing and significant organizational change.	Australia
Sherlock-Storey et al., 2013	Middle managers public sector	Range: 35–64	75%	Organizational change (budget, staff and service cuts).	UK
Slayter et al., 2018	Nurses	48	95% (37% not specified)	Nursing job-related stressors, such as patient distress, patient trauma, unrealistic expectations and high workload.	Australia
Sood et al., 2011	Academic clinicians	47	45%	Physician work stressors: multiple demands and expectations.	USA
Stoiber & Gettinger. 2011	First-grade teachers	-	97%	Challenging behaviour of children (noncompliant, aggressive or disruptive).	USA
Tenhula et al., 2014	Veterans	42	17%	Stressor related to post-deployment adjustment: demands of day to day life, civilian employment, significant others, the veteran's health	USA
Van der Meulen et al., 2017	Police officers	44	26%	Police-typical operational stressors and organizational stressors, such as managerial strains.	The Netherlands
Weidlich & Ugarriza, 2015	Military health care providers (nurses, medics)	-	-	Observing horrific injuries in military patients.	USA
Werneburg et al., 2018	Healthcare workers	-	88%	Healthcare worker stressors, such as long work hours, demanding aspects of patient care ever-increasing documentation requirements.	USA

Table 4.5. *Features of psychological resilience-building programmes in the work context (process-based study is shaded grey)*

Author(s)	Programme name and type	Programme aim	Programme duration	Approach
Babanataj et al., 2018	Resilience training[1]	To increase resilience.	5 sessions between 90 and 120 minutes duration (7.5-10 hours total).	Educational
Baum et al., 2018	Building Resilience Intervention (BRI)[1]	To impart resilience-building tools (e.g. self-regulation, expressing feelings, developing personal resources) for personal and classroom use.	4 3-hour meetings (12 hours total)	Skills-based
Chitra & Karunanidhi, 2018	Resilience training program[1]	Improve protective factors (e.g. self-awareness, emotional management, positive attitudes, interpersonal skills).	20 1.5-hour sessions; 2-month period (30 hours total)	Mixed (CBT[a], psychoeducation, relaxation, mindfulness)
Christopher et al., 2018	Mindfulness-Based Resilience Training (MBRT)[1]	To enhance resilience	8 2-hour weekly meetings; 1 6-hour extended class (20 hours total)	Mixed (experiential and educational
Foster et al., 2018	Promoting Adult Resilience (PAR) Programme[1]	To enhance resilience and wellbeing, improve relationships, decrease conflict and stress.	2 day-long workshops 3 weeks apart (16 hours total)	Mixed (strength-focused; CBT[a]; interpersonal therapy)
Joyce, Shand, Bryant, et al., 2018	Resilience@Work (RAW) Mindfulness Programme[4]	To enhance psychological resilience.	6 sessions of 20-25 minutes (2-2.5 hours total)	Mixed (mainly mindfulness and psychoeducation)
Kinman & Grant, 2017	Multi-modal resilience training[1]	To enhance resilience and wellbeing, specifically self-efficacy, reflective ability and aspects of compassion.	3 days over a 2-months period (24 hours total)	Skills-based
Maunder et al., 2010	Pandemic Influenza Stress Vaccine[4]	To improve resilience to pandemic-related stress.	7-17 sessions (respectively, 1.75, 3 and 4.5 hours total per course)	Educational
Mealer et al., 2014	Multimodal resilience training programme[3]	To promote resilience.	12 weeks: 2-day educational workshop; 12 30 min. written exposure therapy sessions; mindfulness exercises 3 x 15 min. per week; 3 x 30-45 min. aerobic exercises per week; event-triggered counselling sessions (> 50 hours total)	Mixed (CBT[a]; mindfulness; written exposure sessions; aerobic exercise; event-triggered counselling)
Mehta et al., 2016	Relaxation Response Resiliency Program (3RP) [1]	To promote resilience, specifically eliciting relaxation, reducing stress reactivity, increasing connectedness.	1 4-hour introduction session; 4 2-hour education sessions every other week over 2-months period (12 hours total)	Mixed (education, skills, relaxation)

Ramey et al., 2016	Resilience training[3]	Self-regulating emotional and physiological response to stress.	1 2-hour educational class and 1 telementor session over a period of 2-3 weeks; exercising coherence (> 3 hours)	Biofeedback
Rogerson et al., 2016	Brief workplace resilience programme[1]	Enhance employee resilience.	5 1-hour workshops over a period of 5 weeks (5 hours total)	Mixed (e.g. educational, strength, cognitive-behavioural solution-focused, relaxation)
Sherlock-Storey et al., 2013	Brief coaching for resilience[2]	To develop and utilize resilience behaviours (e.g. goal setting, strength use, social support, self-care)	3 90-min. coaching sessions; 6-week timeframe (4.5 hours total)	Skills-based
Slayter et al., 2018	Mindful Self-Care and Resiliency (MSCR) intervention[1]	To improve nurse resilience.	1 day educational workshop (6-hours) and 3 weekly 1.75 hours follow-up sessions (11.25 hours total)	Mixed (educational, mindfulness, skills-based)
Sood et al., 2011	Stress Management And Resiliency Training (SMART)[2]	To enhance physician resilience and decrease stress.	1.5 hour (1 session; optional 30-60 min. follow-up session)	Mixed (attention focusing and relaxation)
Stoiber & Gettinger, 2011	Functional assessment (FA) combined with positive behaviour support (PBS)[1]	Promote resilience in educators.	3 5-hour training sessions; completing FA and implementing PBS (> 15 hours)	Mixed (FA and PBS)
Tenhula et al., 2014	Moving Forward programme[1]	Enhancing resilience to effectively cope with a variety of stressful events.	4 sessions (duration not specified)	Problem solving
Van der Meulen et al., 2017	Mental Strength Training (MST)[1]	Enhancing psychological resilience, specifically challenge, control, confidence	3 8-hours training days, 1 brush up day months later (32 hours total)	Skills-based
Weidlich & Ugarriza, 2015	Army's Care Provider Support Programme (CPSP)[1]	To improve resilience.	1-2 hour lesson	Mixed (awareness and energy management)
Werneburg et al., 2018	Stress Management And Resiliency Training (SMART) program[1]	To enhance resiliency, reduce perceived stress and anxiety, improve quality of life and health behaviours.	12 60-90 min. sessions over a period of 12 weeks (12-18 hours total)	Mixed (educational, skills-based, attention focusing)

[1] Group-based programme; [2] individual-based programme; [3] Group- and individual-based programme; [4] Computer-/internet-based programme

[a] Cognitive behavioural therapy

explained why resilience was not consistently operationalized. To summarize, we found four studies that consistently operationalized resilience: one as a dynamic process and three otherwise. The other sixteen studies imprecisely defined and/or poorly operationalized resilience.

When it comes to consistency between the measurement of resilience (see Table 4.2) and programme approach (see Table 4.5), we found two studies with some consistency. Stoiber and Gettinger (2011) measured the belief and instrumental knowledge of participants related to the programme content. However, as previously mentioned, their operationalization of resilience was poor. Van der Meulen and colleagues (2017) measured dimensions of mental toughness, challenge, control and confidence, which was the focus of their Mental Strength Training. However, their conceptualization of resilience as well as the relationship between the programme content and their choice of the Resilience Scale-NL remained unclear. In the other eighteen reviewed studies we found no consistency between the programme content and the way resilience was operationalized. Only one of these studies explicitly mentioned that 'the current research was not designed to establish causal links between program content and subscale outcomes' (Rogerson et al., 2016, p. 332). In sum, all included studies showed flaws when it comes to intra-programme consistency which affects the content validity of these studies.

4.4. DISCUSSION

The first aim of the current systematic review was to answer the question of how effective process-based versus non-process-based psychological resilience-building programmes in the work context are in enhancing psychological resilience in the short- and long-term. We found one study that investigated the effectiveness of a process-based resilience-building programme (Foster et al., 2018). This programme was hardly effective in enhancing resilience in the short-term and not at all in the long-term. In addition, nineteen studies investigated the effectiveness of non-process-based programmes. Forty-two percent of these programmes were fully effective in enhancing resilience in employees immediately after the programme ended, 21% were partly effective and 37% were not effective. Six of the nineteen non-process-based studies also investigated follow-up effects and 50% showed that the programme was effective in enhancing resilience in employees in the long-term. These results indicate that non-process-based resilience-building programmes in the work context can be effective in enhancing resilience in both the short and long-term. Since we found only one process-based programme, we cannot draw any conclusion about the effectiveness of such programmes.

Even though the results for non-process-based programmes are promising, it should be noted that these were not based on the current understanding of psychological resilience as a dynamic process. In the work context, resilience is only recently considered from this perspective (Fletcher & Sarkar, 2013; IJntema et al., 2019; Windle, 2011). In addition, process-based instruments are not readily available. Previous reviews regarding the measurement of resilience (Pangallo et al., 2015; Smith-Osborne & Whitehill Bolton, 2013; Windle et al., 2011) report only one process-based instrument, the 'Multidimensional Trauma Recovery and Resiliency instrument' (MTRR99; Liang, Tummala-Narra, Bradley, & Harvey, 2007). Therefore, it could be argued that our classification in process-based versus non-process-based programmes is premature. Nonetheless, the results of the current systematic review are informative. They show the need for developing and investigating more process-based resilience-building programmes, regardless whether they are planned before, during or after stressor exposure.

In order to explain programme effects, our second research question was related to the core features of psychological resilience-building programmes: the definition and measurement of resilience, the characteristics of participants and stressors, and the programme approach. To answer this question, we did not distinguish between process-based versus non-process-based programmes. Our study indicates that the following factors may have positively influenced programme effectiveness: programmes that focus on a specific stressor, use a single programme approach, use an individual mode of delivery and last more than fourteen hours. Only the beneficial effect of an individual approach was mentioned in a previous systematic review (Vanhove et al, 2016).

Similarities between the included studies were that programmes were mainly based on a non-process-based understanding of resilience, offered in group sessions to mostly female employees ranked high in their need for resilience who were facing multiple coinciding job-related stressors during the programme. Apart from these similarities, included studies differed greatly when it comes to the study design, their definition of resilience, their measurement choice, the number of participants, the type of (chronic) stressor(s) they were facing, the programme approach, duration and number of sessions. Similar differences were found in previous systematic reviews regarding the effectiveness of resilience-building programmes (Fox et al., 2018; Joyce, Shand, Tighe, et al., 2018; Leppin et al., 2014; Macedo et al., 2014; Robertson et al., 2015). These differences raise the question of what the content of a resilience-building programme should entail. We did not find a standard format such as there is for mindfulness training (Mindfulness-Based Stress Reduction training; Kabat-Zinn, 1990). A lack of standardization is often seen in an emerging field (Macedo et al., 2014): most of the studies included in the current review are from recent date (≥ 2010). Without a standard format, comparing resilience-building

programmes is like comparing apples and oranges which makes it hard to determine the overall effectiveness of such programmes.

A major concern in the emerging field of work-related resilience-building programmes is intra-programme consistency (Macedo et al., 2014; Robertson et al., 2015). The current review found that the design of all included studies showed inconsistencies between the definition, measurement and enhancement of psychological resilience. The implication of this finding is that all included studies lack content validity which may have impacted the results of the current review. Therefore, we repeat the call, made by Robertson and colleagues (2015), for more consistency in terms of how resilience is defined, measured and enhanced. As the field of resilience is fragmented, it is important to be explicit, precise and consistent in this area (IJntema et al., 2019). More specifically, we call to define and measure resilience as a dynamic process from now on as resilience is now regarded as such (Fisher et al., 2018; IJntema et al., 2019).

A remarkable finding is that we excluded 22 studies – investigating programmes titled 'resilience programmes' – in which the authors either did not provide a definition of psychological resilience or did not specify the stressor(s) that triggered the need for resilience or did not clarify how they operationalized psychological resilience. Not providing a definition of the central concept is negligent to say the least. Not measuring whether a resilience-building programme delivers on what it promises, is a missed opportunity. As a consequence, it cannot be determined what these so-called 'resilience-building' programmes are about and whether they deliver on what they promise. Therefore, they were not included in the current systematic review. In the three studies that did not report a stressor, we cannot determine why the stressor was omitted, for example, because the programme participants did not face a stressor or because the authors did not report the stressor(s). In the case of the former, the programme under study should not be called a 'resilience' programme because without a stressor there is no need for resilience building (IJntema et al., 2019). In the case of the latter, a crucial detail has been omitted. To know which details are relevant to report, a checklist for resilience-building programmes has recently been developed (IJntema et al., 2019). This checklist can help to prevent that important details are disregarded in reports on resilience-building programmes.

4.4.1. Limitations

A limitation of the current systematic review is that it we used only five of the twelve criteria for resilience-building programmes, suggested by IJntema and colleagues (2019). However, compared to previous systematic reviews (Fox et al., 2018; Robertson et al., 2015; Vanhove et al., 2016), we used more precise criteria to select 'resilience-building' programmes. The use of these criteria resulted in very little overlap between our review

and previous reviews of resilience-building programmes in the work context which included studies either up to April 2014 (Robertson et al., 2015; Vanhove et al., 2016) or up to April 2017 (Fox et al., 2018). A mere four of the twenty studies in the current review were included in these previous reviews, namely the study of Sherlock-Storey and colleagues (2013), Sood and colleagues (2011; 2014), and Mehta and colleagues (2016). Hence, our review is not only a timely update, but consists of a different selection of studies compared to previous systematic reviews.

Another limitation of this study is that we did not conduct a meta-analysis. As a consequence, we did not statistically identify the effect of resilience-building programmes. However, we question the added value of a meta-analysis because we found little uniformity in the way resilience was measured in the twenty studies that were included in our review.

Our systematic review was limited to resilience-building programmes in the work context and the majority of the participants in the included studies were working in occupations ranked high in their need for resilience, such as healthcare, police and education. These employees may not be representative for employees working in occupations ranked lower in their need for resilience which limits the generalizability of the results to employees in general.

Given that we only included studies written in English, we mainly found studies conducted in English speaking countries. This limits the generalizability to other countries. Our systematic review was also restricted to studies published in peer-reviewed scientific journals. As a consequence, our review may be subject to publication bias and we may have missed otherwise eligible studies outside the scientific domain. Finally, as we used stricter criteria to select resilience-building programmes than previous systematic reviews, we excluded many studies that did not report a definition of resilience, a measure of resilience and/or a stressor. Not reporting this information, does not necessarily mean that the authors did not have this information. Programme descriptions are often short in research papers and programme manuals are not included. However, providing this information is crucial in a field as complex as the field of resilience (IJntema et al., 2019).

4.4.2. Implications for future research

In the work context, research regarding psychological resilience is an emerging field (McLarnon & Rothstein, 2013). In this field, conceptual clarity regarding resilience as a process has only recently been established (IJntema et al., 2019). To date, few programmes have been developed from this perspective. Therefore, the first task at hand is that researchers develop and investigate resilience-building programmes from the current perspective on resilience as a dynamic process. For this purpose, the checklist for process-based resilience-building programmes can be used (IJntema et al., 2019). For example, this

checklist prescribes to define resilience, in essence, as a dynamic process representing positive adaptation to a stressor. In addition, the checklist prescribes to specify the stressor that triggers the need for resilience, to depict and explain the dynamic process that people go through in order to adapt to that stressor and to explain how adaptation is understood in the programme. Using the checklist contributes to programme quality and consistency as it helps to ensure that the way resilience is defined, depicted and measured in the programme is consistent with both the programme target and approach. We also recommend focusing the programme on a specific stressor, using a single programme approach, using an individual mode of delivery and considering a programme duration of more than fourteen hours. Our systematic review indicates that these factors may have positively influenced programme effectiveness.

When investigating the effectiveness of a single process-based resilience-building programme, we recommend taking the timing of the programme in relation to stressor exposure into consideration: is the programme offered before, during or after stressor exposure (Chmitorz et al., 2018). When a programme is offered prior to stressor exposure in order to prepare employees for a stressor, ideally, the whole process of psychological resilience can be measured: pre-stressor adjustment before the programme and positive adaptation after the stressor has ceased. In practice however, stressors are often unpredictable, frequent and/or of long duration (Britt, Shen, Sinclair, Grossman, & Klieger, 2016). In these instances, researchers should clarify which specific element(s) in the resilience process are targeted in the programme and how they measure these elements in their effectiveness study (IJntema et al. 2019). This enables them to show how the programme delivers on what it promises.

In due time, when the effectiveness of process-based resilience-building programmes has been investigated in single research studies, the current systematic review could be replicated and extended to synthesize the accumulated evidence on process-based resilience-building programmes. A new systematic review should preferably be focused on the effectiveness of *process-based* resilience-building programmes and classify these programmes into planned before, during and after stressor exposure. If not, certainly a distinction should be made between process-based versus non-process-based perspectives on resilience. In addition, researchers should not rely on a programme title to decide which programme to include in their systematic review because our review showed that the content of so-called 'resilience-buildings programmes' did not always cover what could minimally be expected. Rather than relying on programme titles, we recommend researchers use the criteria for process-based resilience-building programmes (IJntema et al., 2019) to decide which programmes to include in their systematic review.

4.4.3. Implications for practice

The current systematic review demonstrates that it is premature to draw any conclusions on how effective process-based resilience-building programmes are in enhancing resilience. For that purpose, the number of programmes was too small. Companies interested in purchasing a process-based programme, can use the checklist for process-based resilience-building programmes (IJntema et al., 2019) to determine whether it meets the expected requirements. Companies interested in developing their own programme should be aware that we did not find any best practice example yet. Programme development will therefore require extra time and effort. Useful guidelines in this process can be the aforementioned checklist for process-based psychological resilience-building programmes and handbooks on the development of a theory- and evidence-based programme (see, for example, Bartholomew Eldredge et al., 2016). When offering a process-based resilience-building programme to employees, we recommend companies set up a study to investigate the effectiveness of their programme, preferably in collaboration with researchers that are specialized in this field. By doing so, they contribute to the evidence base regarding the effectiveness of process-based resilience-building programmes.

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Chapter 5

Building resilience resources during organizational change: A longitudinal quasi-experimental field study

'It is not the strongest of the species that survives,
nor the most intelligent.
It is the one that is most adaptable to change.'[8]

[8] Charles Darwin

Building resilience resources during organizational change: A longitudinal quasi-experimental field study

Abstract

The first aim of the current quasi-experimental field study was to investigate the immediate and three-month follow-up effects of 'ResilienceWise', a resource-based resilience-building programme, using a 2 (group) x 3 (time) mixed design. As the programme's mode of delivery was coaching, the second aim of this study was to investigate whether the strength of the coach-client working relationship would explain programme effects. Participants in the experimental group were health care office workers of a large Dutch insurance company facing organizational change. Ninety-one participants completed the programme which consisted of four coaching sessions supported by an online self-help programme. The results of this group were compared to the results of a no-programme control group of 140 employees. Positive immediate and long-term effects were found on six resilience resources – hope, self-efficacy, environmental mastery, purpose in life, positive affect and positive relationships – and on two indicators of positive adaptation – general health and recovery from stress. Only long-term effects were found on another indicator of positive adaptation: task performance. No effects were found on the resilience resources of optimism and mindfulness. The strength of the coach-client relationship was related to most of the immediate programme effects. These study results confirm that resilience resources can be enhanced to improve positive adaptation in employees during organizational change and extend the existing evidence that resource-based resilience-building programmes can be effective. These results are promising for employees in need of psychological resilience during organizational change.

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5.1. INTRODUCTION

The expression *'change is the new normal'* refers to the notion that we are working (and living) in a world of continuous change. Many of us are affected by organizational change, such as mergers, downsizing, short-term contracts, new technologies, digital communication, automation and 24/7 global work systems (Crane, 2017; Fisher, Ragsdale, & Fisher, 2018; Kossek & Perrigino, 2016). The American Psychological Association (2017) concluded, based on a large workplace study (1,512 respondents), that half of the U.S. adult working population is affected by organizational change. Their study also showed that change comes with a price: employees affected by change were more than twice as likely to report chronic work stress and more than four times as likely to report physical health symptoms, compared to employees not affected by change. This study does not stand on its own, many other studies reported on the negative effects of organizational change (see, for example, Giæver & Hellesø, 2010; Quinlan & Bohle, 2009). Change is therefore considered a risk factor for occupational health (Saksvik et al., 2007).

One way to protect employees from the potential negative effects of change is to enhance their psychological resilience as change poses a challenge to the resilience of employees (Rogerson, Meir, Crowley-McHattan, McEwen, & Pastoors, 2016; Fletcher & Sarkar, 2013). We define resilience as the dynamic process of adapting well in the face of a stressful event or circumstance (*stressor*; American Psychological Association, 2020; IJntema, Burger, & Schaufeli, 2019; Infurna & Luthar, 2018; Luthar, Cicchetti, & Becker, 2000). Because of the potential beneficial effects of resilience building in the face of a stressor, more and more companies are implementing resilience-building programmes during times of change (Rogerson et al., 2016). Three systematic reviews demonstrated that resilience-building programmes can be effective in an occupational context (Fox et al., 2018; Robertson, Cooper, Sarkar, & Curran, 2015; Vanhove, Herian, Perez, Harms, & Lester, 2016). However, the question remains whether such programmes are effective in the specific context of organizational change.

Two studies investigated the effectiveness of resilience-building programmes in the context of organizational change (Rogerson et al., 2016; Sherlock-Storey, Moss, & Timson, 2013). The first study (Sherlock-Storey et al., 2013) examined how effective a resilience coaching programme was in enhancing resilience in twelve middle managers of a UK public sector organization facing budget, staff and service cuts. The second study (Rogerson et al., 2016) examined how effective a mixed programme (combining an educational, strength-based, cognitive-behavioural, solution-focused and relaxation approach) was in enhancing resilience in thirteen employees of an Australian power distribution company facing downsizing. Both studies showed encouraging results. The first study (Sherlock-Storey et al., 2013) had a 1 (single group) x 2 (pre-test; post-test)

design and showed that resilience was enhanced in programme participants as measured by the resilience scale of the Psychological Capital Questionnaire (Luthans, Avolio, Avey, & Norman, 2007). The second study (Rogerson et al., 2016) had a 2 (experimental group; control group) x 2 (pre-test; post-test) randomized controlled design and showed that resilience was enhanced in programme participants as measured by the Resilience at Work Scale (RAW; Winwood, Colon, & McEwen, 2013). Participants reported significantly higher scores on five of the seven subscales of the RAW: finding their calling, maintaining perspective, managing stress, interacting cooperatively and staying healthy. No effects were found on the two other subscales: living authentically and building networks. These results indicate that resilience can be enhanced during organizational change. However, a limitation of these studies was that the sample sizes were small which implies that the results are only tentative. In addition, as no longitudinal effects were measured, it remains unclear whether the results were sustained.

The aim of the current study is to contribute to the evidence base regarding the effectiveness of psychological resilience-building programmes in the context of organizational change. To that purpose, we first investigated how effective a new resilience-building programme, called *ResilienceWise* (in Dutch: *VeerkrachtWijzer*), is in enhancing resilience in a large sample of employees using a longitudinal design. Secondly, as this programme was set up as a coaching programme, we investigated whether the strength of the relationship between the coach and the client is an explanatory factor related to programme effectiveness.

5.1.1. Dynamic process of psychological resilience

In the introduction to this chapter, we defined psychological resilience as a dynamic process. We added 'psychological' to clarify that we studied resilience at the mental level of human functioning and that we did not include the physical level (Tusaie & Dyer, 2004). According to Bonanno, Romero and Klein (2015), a process-based perspective on psychological resilience implies that we should not understand resilience as an isolated construct, but rather view it as a broad phenomenon encompassing a number of temporally related elements. To define this process, they propose a simple, broadly applicable framework that consists of four basic elements. The first element is *baseline* or *pre-stressor adjustment*, which functions as a setpoint for interpreting the outcome of the process of resilience (Bonanno et al., 2015). In the current study, we were unable to collect data on pre-stressor adjustment because the stressor was already present. The second element is the *stressor*, which is the stimulus that is needed to trigger the process of psychological resilience (Fletcher & Sarkar, 2013). In the current study, the stressor was organizational change. More specifically, employees' job security was uncertain due to changing governmental policies which posed a threat to the existence of the department

where they worked. In addition, the organization – a large Dutch insurance company – was in the process of a merger. The third element in Bonanno and colleagues' (2015) framework is a constellation of *predictive factors*. These are factors that protect people against harm, promote wellbeing or enable people to adapt to the stressor they encounter. Therefore, they are also known as 'protective factors', 'promoting factors', 'adaptive factors' or 'resources' (Davydov, Stewart, Ritchie, & Chaudieu, 2010; Fletcher & Sarkar, 2013; Masten, 2014). In the current study, we use the term '*resilience resources*'. The specific aim of the ResilienceWise programme was to enhance resilience resources of employees. Below, we explain which resources were selected in the current study. The last element in the framework is *post-stressor adjustment* or *positive adaptation*, which is regarded as the visible manifestation of resilience (Fisher et al., 2018; Windle, 2011). Below, we explain which indicators of positive adaptation were selected in the current study. Together, these four elements – pre-stressor adjustment, stressor, resilience resources and positive adaptation – explain how employees adapt to stressors. Figure 5.1 depicts this process. To investigate the effectiveness of the ResilienceWise programme, we measured both resilience resources and positive adaptation (shaded grey in Figure 5.1).

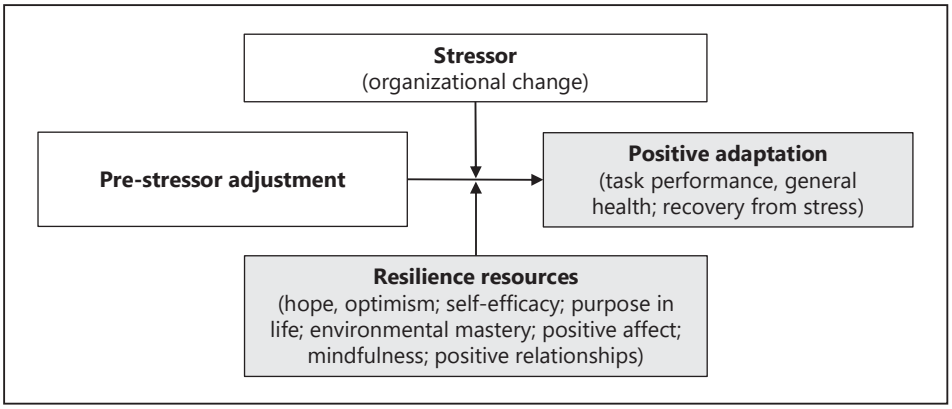

Figure 5.1. *Dynamic process model of psychological resilience*

5.1.2. Resilience resources

In the work context, the most common approach to resilience-building programmes is to enhance resources (Vanhove et al., 2016). We define resilience resources as the 'influences that modify, ameliorate, or alter a person's response to some environmental hazard that predisposes to a maladaptive outcome' (Rutter, 1985, p. 600). Building resilience resources is important because they enable individuals to adapt to the circumstances they encounter, either by protecting them against harm or by promoting adaptation (Davydov et al., 2010; Fletcher & Sarkar, 2013). According to the Conservation of Resources (COR)

theory (Hobfoll, 1989), people generally strive to retain, protect and build resources. Stressful circumstances, such as organizational change, are known to hinder this process and could cause depletion of people's resources. Therefore, it is important to protect people against resource loss and promote resource building during stressful times.

Resilience resource-building programmes typically focus on resources that are psychosocial in nature and malleable (Vanhove et al., 2016; Masten, 2014). For both empirical and practical reasons, we selected eight resilience resources as the focus of the ResilienceWise programme: hope, optimism, self-efficacy, purpose in life, environmental mastery, positive affect, mindfulness, positive relationships (see Table 5.1 for the definitions of these concepts). Our empirical reasons were that these resources were most commonly selected in other resilience resource-building programmes (Vanhove et al., 2016) and/or demonstrated a large effect in previous resilience studies (Lee et al., 2013)

Table 5.1. *Overview of the eight resilience resources and the three indicators of positive adaptation that are targeted in the ResilienceWise programme*.

Category	Study outcomes	Definition
Resilience resources	Hope	'The perceived capability to derive pathways to desired goals, and motivate oneself via agency thinking to use those pathways' (Snyder, 2002, p. 249).
	Optimism	'The extent to which people hold generalized favourable expectancies for their futures' (Carver, Scheier, & Segerstrom, 2010, p. 879).
	Self-efficacy	A judgment of one's ability to organize and execute courses of actions to produce expected outcomes (Bandura, 1997).
	Purpose in life	The belief that one's life has direction and meaning (Ryff, 1989).
	Environmental mastery	'The capacity to manage effectively one's life and surrounding world' (Ryff & Keyes, 1995, p. 720).
	Positive affect	The experience of pleasurable feelings in response to a job (Van Katwyk, Fox, Spector, & Kelloway, 2000).
	Mindfulness	'A receptive attention to and awareness of present moment events and experiences' (Brown, Ryan, & Creswell, 2007, p. 212).
	Positive relationships	'The possession of quality relations with others' (Ryff & Keyes, 1995, p. 720).
Indicators of positive adaptation	Task performance	'The proficiency (i.e. competency) with which one performs central job tasks' (Koopmans et al., 2011, p. 858).
	General health	The extent to which symptoms that are associated with mental illnesses are absent in a person (Goldberg, 1972).
	Recovery	'The ability to bounce back or recover from stress' (Smith et al., 2008, p. 194).

and/or were part of the short-list of widely reported factors associated with resilience (Masten, 2014). Our practical reason was that the selected resilience resources – except for hope and self-efficacy – were part of an existing online programme 'Psyfit' (Bolier et al., 2013) that we used in the programme to make it more cost-effective. The specific aim of the ResilienceWise programme was to enhance the eight aforementioned resilience resources in employees during organizational change. We measured these resources immediately after the programme ended and at the three-month follow-up. We explain this follow-up period in the next section. We formulated the following hypotheses:

Hypothesis 1a: The ResilienceWise programme enhances hope, optimism, self-efficacy, purpose in life, environmental mastery, positive affect, positive relationships and mindfulness in the experimental group compared to a control group.

Hypothesis 1b: The immediate effects on the eight resilience resources (hypothesis 1a) are still present three months after completion of the programme.

5.1.3. Positive adaptation

By enhancing resilience resources, we expected that the ResilienceWise programme would also impact positive adaptation (see Figure 5.1). This outcome should ideally be measured after the implementation of the organizational change, however, because it was uncertain when the governmental policies would take effect, we were unable to accomplish this. Instead, we negotiated a follow-up period of three months. This was the maximum period that was feasible within the organization. To measure positive adaptation we chose three indicators: task performance, general health and recovery from stress (see Table 5.1 for the definitions of these concepts). These are suitable for the work context and are regarded as indicators of sustainable employability which allow employees to continue to make a valuable contribution through their work, while safeguarding their health and wellbeing (Van der Klink et al., 2016). In sum, we extended the first aim of the current study to not only investigate the programme effect on resilience resources, but also on three indicators of positive adaptation. We formulated the following hypotheses:

Hypothesis 2a: The ResilienceWise programme enhances task performance, general health and recovery from stress in the experimental group compared to a control group.

Hypothesis 2b: The immediate effects on the three indicators of positive adaptation (hypothesis 2a) are still present three months after completion of the programme.

5.1.4. Coach-client working relationship

In addition to investigating programme effectiveness, the second aim of the current study is to investigate whether the strength of the working relationship between the coach and the client contributes to the effectiveness of the ResilienceWise programme, which uses an individual (coaching) mode of delivery. The strength of the working relationship is characterized by three features: the bond that the coach and client develop, their mutual agreement on goals to be achieved, and their agreement on the assignments to reach these goals (Bordin, 1979). This relationship strength is considered as a key factor to include in studies regarding the effectiveness of coaching programmes because there is growing evidence that it contributes directly to programme effectiveness (Baron & Morin, 2009; De Haan, Grant, Burger, & Eriksson, 2016; Graßmann, Schölmerich, & Schermuly, 2020; Lai & McDowall, 2014). There is substantial evidence that relationship strength contributes to the effectiveness of individual therapy as well (Horvath & Symonds, 1991; Horvath, Del Re, Flückiger, & Symonds, 2011). Therefore, it has been suggested that relationship strength is not merely a key factor in coaching programmes, but rather a key to the change process in any helping relationship (Bordin, 1979; Graßmann et al., 2020). Considering the key role of relationship strength in explaining programme outcomes, we included it as an explanatory factor in the current study. By including this factor, we also aimed to bridge a gap between studies on the effectiveness of resilience-building programmes (content) and studies on the effectiveness of coaching programmes (method). We formulated the following hypothesis:

Hypothesis 3: In the experimental group, relationship strength is positively related to (changes in) resilience resources and to (changes in) positive adaptation immediately after completion of the ResilienceWise programme.

5.2. METHOD

5.2.1. Design

The present study was a quasi-experimental field study that used a mixed 2 (experimental and control group) x 3 (time: pre-test, post-test, follow-up) design. Dependent variables were eight resilience resources – hope, self-efficacy, optimism, purpose in life, environmental mastery, positive affect, positive relationships and mindfulness – and three indicators of positive adaptation – task performance, recovery and general health. The experimental and control group were rated on the dependent variables two weeks before the start of the programme (pre-test) and immediately after (post-test) and three months after (follow-up) the programme. Figure 5.2 shows the number of participants in the

experimental and control group at each time point as well as the response and drop-outs rates. Because of the spill-over effect of an open exchange of information between employees within the targeted department, we did not randomize the experimental and control group or use a waitlist control group.

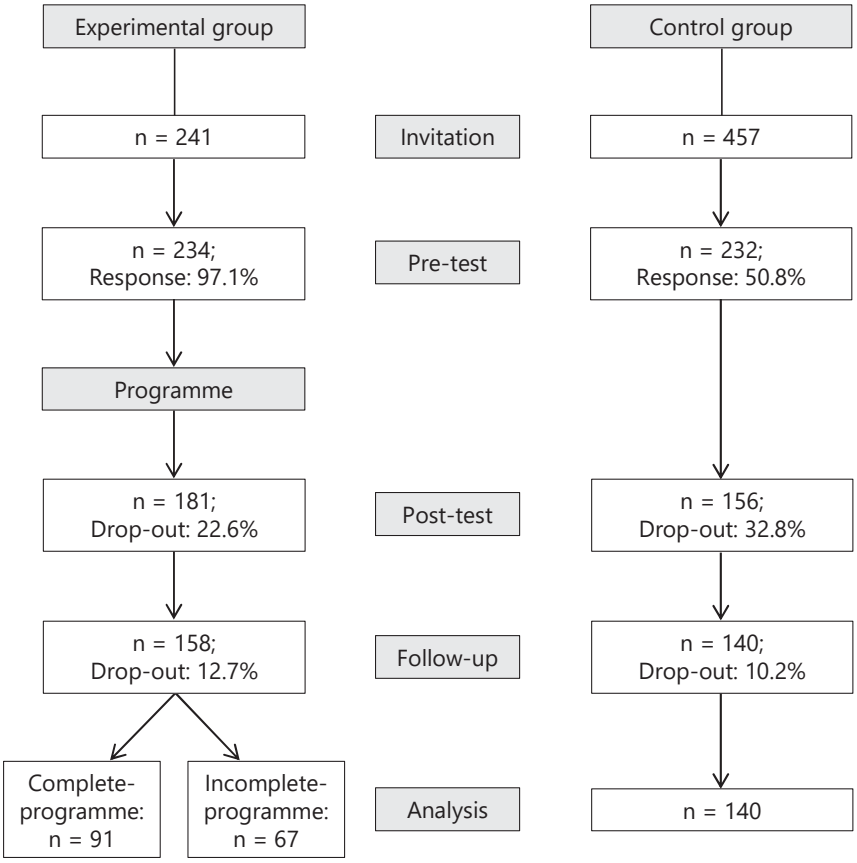

Figure 5.2. *Flow of participants in the experimental group and control group through each stage of the quasi-experiment, including response and drop-out rates*

5.2.2. Participants and procedure

5.2.2.1. Experimental group

Office workers (n = 241) of a health care department in a large Dutch insurance company were invited by the department manager to participate in the ResilienceWise programme. The core task of these office workers was to arrange care for or provide care budgets to

clients. The programme was intended for office workers who had at least a one-year contract. They received a brochure about the programme and were invited to a Q&A session to ensure that they understood the remit of the programme as well as its aims and content, the required time and effort on their part and the expected results. Employees were encouraged by their team leaders to give the programme a chance and to attend at least the first coaching session (intake). Of the total number of employees, 97.1% responded to this invitation. Employees who did not want to take part in the programme were asked to give their reasons to their team leader. They gave the following reasons: transfer to another department or did not feel a need for the programme.

Three weeks before the start of the programme, employees were invited by the programme coordinator to register by choosing – based on the profile descriptions – one of eight external coaches; all licenced psychologists selected specifically for this programme. These coaches were all female, aged between 30 and 56 years. Selection criteria for coaches were: being a registered psychologist with the Dutch Association of Psychologists (NIP; www.psynip.nl); having completed a professional coaching training; and at least five year's coaching experience. Before the start of the programme, coaches attended a three-day training course to equip them with an understanding of the content and process of the ResilienceWise programme and received the programme manual. During the programme, coaches received formal coaching supervision by an experienced coaching psychologist.

After registration, the participants received an invitation for the first coaching session and were asked to complete a forty-minute online assessment prior to the first coaching session (pre-test). Participants were informed that the anonymized data of the online assessment would be used for research purposes and to indicate if they had any objection. Of the invited participants, 234 completed the first questionnaire and started the programme, and 158 participants completed the questionnaires at all time points. After completion, these participants received the book 'Mental Fitness' (Bolier, Haverman, Walburg, 2010) as a token of appreciation and continued to have access to the online programme 'Psyfit' for another six months. The total drop-out rate was 32.5%. Reasons for drop-out were termination of employment, transfer to another department, maternity leave and participants' perception that the programme did not meet their individual needs.

The programme consisted of four individual coaching sessions and the completion of two of six e-modules (see § 5.2.3). Ninety-one participants completed all the elements of the programme. This *complete-programme group* constituted our experimental group. To tests our hypotheses, the results of this complete-programme group were compared to the *no-programme control group*. Sixty-seven participants did not complete all the elements of the programme. They attended all coaching sessions, but completed only one

or no e-module at all. We refer to this group as the *incomplete-programme group*. We mention this group as we conducted additional analysis for this group (see § 5.3.5).

5.2.2.2. Control group

To avoid a spill-over effect, 457 office workers, who did not work at the same health care department as the experimental group, were approached to be the no-programme control group. These employees were facing the same merger as employees in the experimental group, but were not facing changing governmental policies. Employees in the control group were asked to participate in a study to measure the long-term (in)stability of mental health as an extension of their annual Periodic Medical Examination. They received their questionnaires at the same time points as the experimental group. Of the 457 employees, 232 agreed to participate in the study and completed the first questionnaire. The other 225 employees did not respond to the (repeated) invitation, had no time to participate or had other priorities. A total number of 140 employees completed the questionnaires at all time points. After completion, they received the book 'Mental Fitness' (Bolier et al., 2010) as a token of appreciation and one year's access to the online programme Psyfit (see § 5.2.3). The total drop-out rate in the control group was 39.6%. One unfortunate reason for drop-out was that the company changed the e-mail addresses of their employees, including our research participants, and we were unable to contact all participants. Another reason was that participants could not fill out the questionnaire on their work computer as these computers stopped supporting Java which was needed to display the questionnaire. Other reasons were termination of employment or job change.

5.2.3. *ResilienceWise* programme

The resilience-building programme 'ResilienceWise' was developed for office workers of a health care department in a large Dutch insurance company facing organizational change. The general aim of the programme was to enhance psychological resilience which we already defined in the introduction to this chapter as a dynamic process of adapting well in the face of a stressor. The stressor that triggered the need for resilience building was organizational change due to changing governmental policies which posed a threat to the existence of this department. In addition, the company was in the process of a merger. The specific changes that employees experienced were changes in their work environment and working conditions, e.g. new team leaders and senior managers, team composition change, shifting tasks, downsizing and transfers to different departments. In such a context of change, organizations are in need of resilient and resourceful employees (Van den Heuvel, 2013). The specific aim of the ResilienceWise programme was to enhance resilience resources in employees which – over time – should enhance positive adaptation (see Figure 5.1). By building resilience resources, the company aimed 1) to shift the

attention of employees away from the negative effects of the changing work context, 2) to help them become more resourceful, efficacious and adaptive and 3) to help them to take greater responsibility to handle uncertainty and change on an ongoing basis.

The ResilienceWise programme was set up as a coaching programme, supported by the evidence-based online self-help programme 'Psyfit' (psychological fitness online; www.psyfit.nl; Bolier et al., 2013). Table 5.2 gives an overview of the structure and objectives of the ResilienceWise programme. As can be seen from this table, the programme took place over a period of thirteen weeks.

Table 5.2. *Overview of the structure and objectives of the ResilienceWise programme*

Week	Activity	Objectives
-1	Online assessment	Assess resilience resources
1	First coaching session (intake)	1. Establish a working relationship 2. Discuss the results of the assessment 3. Set personal goals for the coaching sessions 4. Formulate action steps to support personal goal attainment and to enhance resilience resources 5. Select first Psyfit e-module to support personal goal attainment between coaching sessions
	Psyfit-module 1 week 1	Enhance one specific resilience resource (related to the topic of the Psyfit e-module)
2-4	Psyfit-module 1 week 2-4	See Psyfit e-module 1 week 1
	Take action on goals	Personal goal attainment (as determined in 1st session)
5	Second coaching session	1. Evaluate progress on personal goal attainment and on enhancing resilience resources 2. Readjust personal goals, if necessary 3. Formulate action steps to support personal goal attainment and to enhance resilience resources 4. Select second Psyfit-module to support personal goal attainment between coaching sessions
	Psyfit-module 2 week 1	Enhance one specific resilience resource (related to the topic of the Psyfit e-module)
6-8	Psyfit-module 2 week 2-4	See Psyfit e-module 2 week 1
	Take action on goals	Personal goal attainment (as determined in 2nd session)
9	Third coaching session	1. Evaluate progress on personal goal attainment and on enhancing resilience resources 2. Readjust personal goals, if necessary 3. Formulate action steps to support personal goal attainment and to enhance resilience resources
10-12	Take action on goals	Personal goal attainment (as determined in 3rd session)
13	Fourth coaching session	1. Evaluate coaching process 2. Reflect on personal goal achievement 3. Discuss options to sustain resilience in the future 4. Discuss options to enhance resilience resources in the future

Prior to the first of four one-hour personal coaching sessions, participants completed an initial assessment and received an individual feedback report by e-mail, detailing how they scored on the resilience resources. The coach discussed the results of this assessment with the participant during the first coaching session, helped the participant to set personal goals for the next coaching sessions and helped the participant to select the first e-module in Psyfit. The coaching sessions were planned every four weeks. During the second and third session participants evaluated their progress on personal goal attainment and resilience resource building, adjusted personal goals if necessary and developed action plans to work on goal attainment and resilience resource building between coaching sessions. During the last session, participants reflected to what extent they achieved their personal goals. They also drafted an action plan to support resource building in the future and evaluated the coaching process.

Between coaching sessions, the Psyfit programme supported resource building. Psyfit consists of six e-modules: 1) personal goal setting, 2) positive emotions, 3) positive relationships, 4) mindfulness, 5) optimistic thinking, and 6) mastering your life (Bolier et al., 2013). To get access to Psyfit, participants received an e-mail with a personal username and password. Each Psyfit-module contains four lessons, one lesson per week. Each lesson consists of information and evidence-based exercises based on positive psychology and elements stemming from mindfulness, cognitive behavioural therapy and problem-solving therapy (Walburg, 2008). Each week, participants received an e-mail notifying them that the next lesson could be started. The time investment to complete one e-module was 1-2 hours, depending on personal investment. Participants were requested to complete at least two Psyfit-modules as part of the programme: the first Psyfit-module between the first and second session; the second Psyfit-module between the second and third session. The four one-hour personal coaching sessions were completed during working hours and the initial assessment and online programme were completed after hours.

5.2.4. Measures

Table 5.3 gives an overview of the dependent variables in this study and shows the reliability coefficients of the outcome measures. As can be seen from this table, all but three internal consistencies meet the criterion of .70, a value that is used as a rule of thumb for sufficient internal consistency (Nunnally & Bernstein, 1994). In the three cases that Cronbach's alpha did not meet this criterion, it was equal to or higher than .60 which is considered an absolute minimum (i.e. self-efficacy at pre-test measurement for the complete-programme group; optimism at pre- and post-test measurement for the incomplete-programme group; see Table 5.3).

5.2.4.1. Resilience resources

Hope was measured using the Dutch translation (Ouweneel, 2012) of the six-item State Hope Scale (Snyder et al., 1996). We adapted the items to reflect work-related hope, for example, 'At the present time, I am energetically pursuing my *work* goals'. Participants rated each item on a six-point Likert scale ranging from 'completely disagree' (1) to 'completely agree' (6). A high score indicates that a participant proactively generates one or more pathways to accomplish work-related goals.

Table 5.3. *Reliability coefficients (Cronbach's alpha) of the outcome variables for the complete-programme, incomplete-programme and no-programme control group at three time points*.*

	Complete-programme group (n = 91)			**No-programme control group (n = 140)**			**Incomplete-programme group (n = 67)**		
	α T0	**α T1**	**α T2**	**α T0**	**α T1**	**α T2**	**α T0**	**α T1**	**α T2**
Resilience resources									
Hope	.84	.87	.87	.85	.84	.88	.88	.89	.85
Optimism	.70	.74	.75	.73	.72	.77	.62	.63	.77
Self-efficacy	.60	.78	.81	.81	.82	.88	.80	.86	.85
Environmental mastery	.84	.77	.83	.84	.82	.84	.80	.88	.82
Purpose in life	.75	.80	.84	.84	.80	.84	.83	.86	.87
Positive affect	.85	.91	.92	.84	.85	.89	.86	.92	.93
Mindfulness	.86	.89	.87	.85	.84	.88	.89	.91	.91
Positive relationships	.83	.85	.86	.78	.80	.85	.77	.82	.82
Positive adaptation									
Task performance	.80	.85	.85	.88	.88	.89	.85	.85	.89
Recovery	.86	.86	.79	.86	.82	.85	.82	.87	.85
General health	.88	.81	.85	.88	.82	.86	.81	.92	.89

* T0 = pre-test; T1 = post-test; T2 = follow-up

Optimism was measured using the Dutch translation (Peters, Rius-Ottenheim, & Giltay, 2013) of the six-item Revised Life Orientation Test (Scheier, Carver, & Bridges, 1994). We adapted the items to reflect work-related optimism, for example, 'In uncertain times *at work*, I usually expect the best'. Participants rated each item on a six-point Likert scale ranging from 'completely disagree' (1) to 'completely agree' (6). A high score indicates that a participant has a positive future expectancy at work.

Self-efficacy was measured using the five-item General Work Efficacy Scale, developed by Schaufeli following the recommendations of Bandura (Ouweneel, 2012). A sample item is: 'I can always manage to solve difficult problems at work if I try hard enough'. Participants rated each item on a six-point Likert scale ranging from 'completely disagree' (1) to 'completely agree' (6). A high score indicates that a participant has confidence in his capabilities to succeed at challenging tasks at work.

Environmental mastery was measured using the corresponding six-item scale of the Amsterdam Wellbeing Scale (AWS; Van Dierendonck, 2005). The AWS is the Dutch translation of the scales of psychological wellbeing (Ryff, 1989). A sample item is: 'In general, I feel I am in charge of the situation in which I live'. Participants rated each item on a six-point Likert scale ranging from 'completely disagree' (1) to 'completely agree' (6). A high score indicates that a participant feels effective in dealing with their environments.

Purpose in life was measured using the corresponding six-item scale of the AWS (Van Dierendonck, 2005). A sample item of the 'purpose in life' scale is: 'I enjoy making plans for the future and working to make them a reality'. Participants rated each item on a six-point Likert scale ranging from 'completely disagree' (1) to 'completely agree' (6). A high score indicates that a participant has a high sense of purpose and meaning in life.

Positive affect was measured using the Dutch six-item version (Schaufeli & Van Rhenen, 2006) of the positive emotions scale of the Job-related Affective Wellbeing Scale (JAWS; Van Katwyk, Fox, Spector, & Kelloway, 2000). A sample item is: 'In the past months, my job made me feel energetic'. Participants rated each item on a five-point Likert scale ranging from 'never' (1) to 'often' (5). A high score indicates that a participant experiences positive emotions at work.

Mindfulness was measured using the Dutch six-item version (Schroevers, Nyklíçek, & Topman, 2008) of the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003). A sample item is: 'I find it difficult to stay focused on what's happening in the present'. Participants rated each item on a six-point Likert scale ranging from 'almost always' (1) to 'almost never' (6). A high score indicates that a participant has attention to and awareness of what is occurring in the present.

Positive relationships was measured using the corresponding six-item scale of the AWS (Van Dierendonck, 2005). A sample item is: 'I know that I can trust my friends and they know that they can trust me'. Participants rated each item on a six-point Likert scale ranging from 'completely disagree' (1) to 'completely agree' (6). A high score indicates that a participant has high quality, satisfying, trusting relationships with other people.

5.2.4.2. Positive adaptation

Task performance was measured using the Dutch translation (Reijseger, Peeters, Taris, & Schaufeli, 2016) of the nine-item Task Performance Questionnaire (Goodman & Svyantek 1999). In the Dutch translation, the items are adapted to measure self-reported performance. A sample item is: 'I fulfill all the requirements of my job'. Participants answered on a five-point Likert scale ranging from 'completely disagree' (1) to 'completely agree' (5). A high score indicates that a participant carries out activities at work which are formally required for the job.

Recovery was measured using the Dutch translation (Leontjevas, De Beek, Lataster, & Jacobs, 2014) of the six-item Brief Resilience Scale (Smith et al., 2008). We adapted the items to reflect *work-related* recovery, for example, 'I tend to bounce back quickly after hard times *at work*'. Participants answered on a six-point Likert scale ranging from 'completely disagree' (1) to 'completely agree' (6). A high score indicates that a participant is able to recover from stress at work.

General Health was measured using the Dutch translation (Koeter & Ormel, 1991) of the twelve-item version of the General Health Questionnaire (GHQ-12; Goldberg, 1972). A sample item is: 'Have you recently felt you could not overcome your difficulties?'. Participants answered on a four-point Likert scale ranging from 'not at all' (1) to 'much more than usual' (4). The GHQ can be scored in different ways (Koeter & Ormel, 1991). In this study, we used Likert-scoring. A high score indicates that a participant is not experiencing psychological distress.

5.2.4.3. Strength of the coach-client working relationship

Relationship strength was separately measured after the first coaching session using the unpublished Dutch translation (by Waringa and Ribbers in 2011) of the twelve-item Working Alliance Inventory, short form for coaching (WAI-SC; Baron & Morin, 2009). A sample item is: 'My coach and I have developed mutual trust'. Only participants in the experimental group rated each item at post-test measurement on a seven-point Likert scale ranging from 'never' (1) to 'always' (7). A high score indicates a strong working relationship. Cronbach's alpha was .90 for the complete-programme group and .89 for the incomplete-programme group.

5.2.5. Data analysis

Data were analysed using SPSS 24. Since we were unable to randomly assign participants to the experimental and the control group, we conducted preliminary analyses to examine whether these groups were similar. To that purpose, we conducted independent t-tests to check for possible group differences in age, years in function, years in organization and the dependent variables at pre-test. We conducted χ^2-tests to check for possible group differences in gender, marital status, education, tenure and management position. In addition, we conducted similar tests a) to check whether participants in the complete-programme group differed from participants who dropped out of the programme; b) to check whether participants in the control group differed from participants who dropped out of the control group; and c) to check whether participants in the incomplete-programme group differed from participants in the complete-programme and the control group.

To investigate whether the complete-programme compared to no programme had an overall effect on resilience resources (hypothesis 1) and on positive adaptation (hypothesis 2), we conducted 2 (group) x 3 (time) repeated measures multivariate analyses of variances (RM-MANOVA) on the combined resilience resources and on the combined indicators of positive adaptation, respectively, with time as a within-subject factor and group as a between subject factor. RM-MANOVA provides answers as to a) whether the complete-programme group and the control group differ significantly on resilience resources and on positive adaptation (main effect of group); b) whether the combined scores of both groups on resilience resources and on positive adaptation changed significantly over time (main effect of time); and most important for our hypotheses, c) whether resilience resources and positive adaptation changed differently for each group over time (interaction effect). Simple comparisons were included in the analyses to investigate whether significant interaction effects on each separate dependent variable concerned immediate effects (hypotheses 1a and 2a) and/or long-term effects (hypotheses 1b and 2b).

To test our third hypothesis that relationship strength as reported by the complete-programme group is positively related to (changes in) resilience resources and to (changes in) positive adaptation at post-test measurement, we conducted hierarchical regression analyses. In step 1, we entered a specific resilience resource or indicator of positive adaptation at pre-test measurement as the first predictor which tests the effect of the complete-programme on the identical dependent variable at post-test measurement. In step 2, we added relationship strength as the second predictor, to test whether it contributed significantly to the effect of the complete programme on the identical dependent variable at post-test measurement.

5.3. RESULTS

5.3.1. Preliminary analyses

The characteristics of participants in the complete-programme group, the incomplete-programme group and the no-programme control group are shown in Table 5.4. To examine possible sample difference, we tested whether the complete-programme and control group were similar on the characteristics listed in Table 5.4 and on the dependent variables at pre-test measurement listed in Table 5.5. As can be seen from Table 5.4, significant differences were found on gender, education and employment: compared to the control group, the complete-programme group consisted of significantly more women than men ($\chi^2[1] = 8.96$; $p < .01$), significantly more lower than higher educated employees ($\chi^2[1] = 10.58$; $p < .01$) and significantly more temporary than permanently

employed employees ($\chi^2[1] = 5.88$; $p < .05$). As can be seen from Table 5.5, significant differences were also found on self-efficacy and mindfulness: compared to the control group, participants in the complete-programme group scored lower on self-efficacy ($t = -2.25$; $p < .05$) and on mindfulness ($t = -2.32$; $p < .05$) at pre-test measurement.

Table 5.4. *Characteristics of the complete-programme group, the no-programme control group and the incomplete-programme group (see also additional analyses in § 5.3.5.1)*

	Complete-programme group (n = 91)		**No-programme control group (n=140)**		**Incomplete-programme group (n = 67)**	
	M (SD)	%	M (SD)	%	M (SD)	%
Age	41.86 (10.46)		41.25 (8.71)		40.45 (10.48)	
Female		69.2**		49.3		59.7
Living with partner		71.4		81.4		68.7*
Higher educated[1]		39.6**		61.4		34.4***
Permanent employment		81.3*		90.7		83.6*
Manager		13.2		7.9		6.0
Years in function	4.76 (3.66)		5.84 (5.99)		4.68 (4.34)	
Years in organization	14.10 (9.92)		12.36 (9.21)		11.42 (9.76)	

* significant difference compared to no-programme control group; $p < .05$
** significant difference compared to no-programme control group; $p < .01$
*** significant difference compared to no-programme control group; $p < .001$
[1] college/university degree

Two drop-out analyses were executed: one for the complete-programme group and one for the no-programme control group. All participants who provided self-ratings at pre-test measurement were split into two groups: those who had provided information for all times and those who had not. The drop-out analysis for the complete-programme group revealed that the drop-out group (n =76) contained fewer managers ($\chi^2[1] = 4.32$; $p < .05$) and scored significantly higher than the complete-programme group (n = 91) on self-efficacy ($t = -2.14$; $p < .05$), recovery ($t = -3.49$; $p < .01$) and mindfulness ($t = -2.54$; $p < .05$), indicating that they probably had less need for the programme. No differences were found on the other demographic and dependent variables at pre-test measurement. The second drop-out analysis for the control group revealed no differences between participants in the control group (n = 140) and the drop-outs in this group (n = 92) on the demographic variables and the dependent variables at pre-test measurement.

5.3.2. Immediate and long-term effects on resilience resources

It was hypothesized that the ResilienceWise programme would enhance resilience resources in the complete-programme group compared to the no-programme control group (hypothesis 1a) and that these immediate effects would be sustained after three months (hypothesis 1b). Table 5.5 shows the means and standard deviations of the

dependent variables for the complete-programme and control group at three time points. RM-MANOVA demonstrated an overall significant main effect of group ($F[8, 222] = 2.82$; $p < .01$; $\eta_p^2 = .092$), an overall significant main effect of time ($F[16, 214] = 5.67$; $p < .001$; $\eta_p^2 = .298$) and an overall significant time x group interaction effect ($F[16, 214] = 3.58$; $p < .001$; $\eta_p^2 = .211$) on resilience resources. Table 5.6 shows the univariate effects and simple comparisons for each separate resilience resource. This table shows significant time x group interaction effects on all resilience resources, except for optimism and mindfulness. Simple comparisons showed significant immediate and follow-up effects on hope, self-efficacy, environmental mastery, purpose in life, positive affect and positive relationships (hypothesis 1a and 1b). The effect sizes were small to medium. Figure 5.3, 5.4, 5.5, 5.6, 5.7 and 5.8 visualize these results and show that they are in the expected direction: the average scores in the complete-programme group increased, whereas the average scores of the control group remained relatively stable across time (the results for the incomplete programme group are explained in § 5.3.5.2). As can be seen from Figure 5.7, the long-term effect on positive affect may be explained by a decline in scores of the control group. Based on these results, it is likely to assume that the complete-programme enhanced hope, self-efficacy, environmental mastery, purpose in life, positive relationships and positive affect in employees immediately after te programme ended and that these effects were sustained three months after the programme ended. No effects were found on optimism and mindfulness (see Figure 5.9 and 5.10). Hypotheses 1a and 1b are partially confirmed.

5.3.3. Immediate and long-term effects on positive adaptation

It was hypothesized that the ResilienceWise programme would enhance positive adaptation in the complete-programme group compared to the no-programme control group (hypothesis 2a) and that these immediate effects would be sustained after three months (hypothesis 2b). RM-MANOVA demonstrated no significant main effect of group ($F[3, 227] = 1.19$; p = n. s.; $\eta_p^2 = .016$), an overall significant main effect of time ($F[6, 224] = 5.04$; $p < .001$; $\eta_p^2 = .119$) and an overall significant time x group interaction effect ($F[6, 224] = 3.12$; $p < .01$; $\eta_p^2 = .077$) on positive adaptation.

Table 5.5. *Means and standard deviations of the dependent variables for the complete-programme group, the no-programme control group and the incomplete-programme group at three time points (see also additional analysis in § 5.3.5.2 and § 5.3.5.3)*

	Complete-programme group (n = 91)						**No-programme control group (n = 140)**						**Incomplete-programme group (n = 67)**					
	Pre-test		**Post-test**		**Follow-up**		**Pre-test**		**Post-test**		**Follow-up**		**Pre-test**		**Post-test**		**Follow-up**	
	M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**
Resilience resources																		
Hope	4.45	0.66	4.81	0.57	4.80	0.56	4.54	0.64	4.61	0.64	4.57	0.70	4.53	0.75	4.70	0.69	4.63	0.61
Optimism	4.44	0.66	4.53	0.67	4.47	0.72	4.45	0.69	4.47	0.64	4.39	0.71	4.53	0.57	4.53	0.59	4.44	0.67
Self-efficacy	4.42	0.52	4.70	0.55	4.71	0.57	4.59	0.61	4.62	0.58	4.57	0.64	4.54	0.66	4.60	0.71	4.55	0.64
Environm. Mastery	4.68	0.72	4.86	0.62	4.85	0.68	4.73	0.75	4.75	0.69	4.72	0.72	4.68	0.64	4.73	0.71	4.75	0.67
Purpose in life	4.32	0.74	4.73	0.66	4.66	0.73	4.45	0.76	4.48	0.73	4.47	0.76	4.37	0.81	4.57	0.74	4.60	0.76
Positive affect	4.08	0.62	4.33	0.65	4.21	0.67	4.01	0.62	4.06	0.61	3.86	0.74	3.96	0.64	4.13	0.69	4.02	0.79
Mindfulness	4.54	0.64	4.71	0.67	4.72	0.61	4.75	0.65	4.79	0.58	4.74	0.66	4.58	0.71	4.74	0.75	4.70	0.78
Positive relationships	4.57	0.82	4.72	0.82	4.69	0.88	4.66	0.74	4.64	0.78	4.60	0.82	4.63	0.73	4.72	0.77	4.70	0.80
Positive adaptation																		
Task performance	3.88	0.42	3.95	0.42	3.94	0.42	3.93	0.50	3.91	0.51	3.81	0.50	3.84	0.54	3.92	0.46	3.83	0.53
Recovery	3.96	0.81	4.25	0.83	4.21	0.77	4.08	0.82	4.14	0.74	4.10	0.79	4.09	0.80	4.22	0.89	4.17	0.84
General health	3.11	0.46	3.28	0.37	3.28	0.40	3.14	0.46	3.18	0.37	3.12	0.42	3.16	0.37	3.26	0.49	3.21	0.45
Working relationship			5.85	0.75											5.53	0.82		

Table 5.6. *Univariate effects on the dependent variables with between factor 'group' (complete-programme group; no-programme control group) and within factor 'time' (pre-test; post-test; follow-up), including simple comparisons of the scores on the dependent variables between post-test measurement versus pre-test measurement (to measure immediate effects of the complete-programme) and between follow-up measurement versus pre-test measurement (to measure long-term effects of the complete-programme).*

	Main effect group (df = 1, 229)		**Main effect time (df = 2, 458)**		**Interaction effect time x group (df = 2, 458)**		**Comparison post-test versus pre-test for groups (df = 1, 229)**		**Comparison follow-up versus pre-test for groups (df = 1, 229)**	
	F	**η_p^2**	**F**	**η_p^2**	**F**	**η_p^2**	**F**	**η_p^2**	**F**	**η_p^2**
Resilience resources										
Hope	2.28	.010	20.24***	.081	11.91***	.049	16.99***	.069	18.02***	.073
Optimism	0.33	.001	1.47	.006	0.50	.002	0.69	.003	0.95	.004
Self-efficacy	0.07	.000	11.32***	.047	10.66***	.044	15.00***	.061	16.63***	.068
Environmental mastery	0.59	.003	5.02**	.021	4.12*	.018	6.60*	.028	5.89*	.025
Purpose in life	1.25	.005	19.94***	.080	15.16***	.062	27.01***	.105	15.34***	.063
Positive affect	9.29**	.039	10.17***	.043	6.93**	.029	9.69**	.041	10.56**	.044
Mindfulness	2.05	.009	3.93*	.017	2.63	.011	2.13	.009	4.82*	.021
Positive relationships	0.09	.000	1.70	.007	4.12*	.018	7.12**	.030	6.23*	.026
Positive adaptation										
Task performance	0.48	.002	2.35	.010	5.51**	.024	3.59	.015	8.87**	.037
Recovery	0.15	.001	8.96***	.038	4.66*	.020	6.35*	.027	7.03**	.030
General health	2.90	.013	6.23**	.026	5.45**	.023	4.52*	.019	8.41**	.035

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

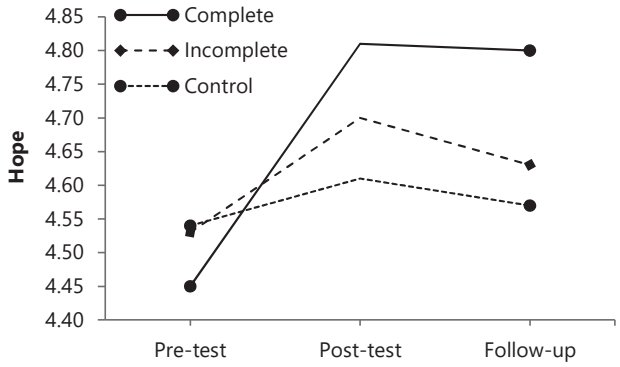

Figure 5.3. *Mean scores on hope for groups across time*

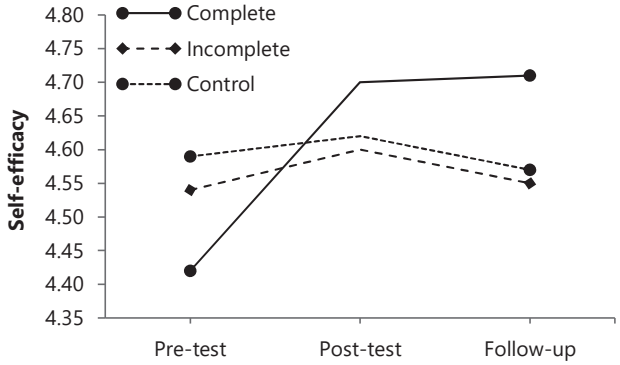

Figure 5.4. *Mean scores on self-efficacy for groups across time*

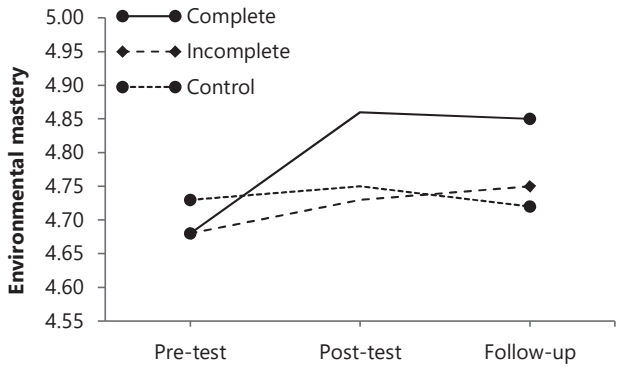

Figure 5.5. *Mean scores on environmental mastery for groups across time*

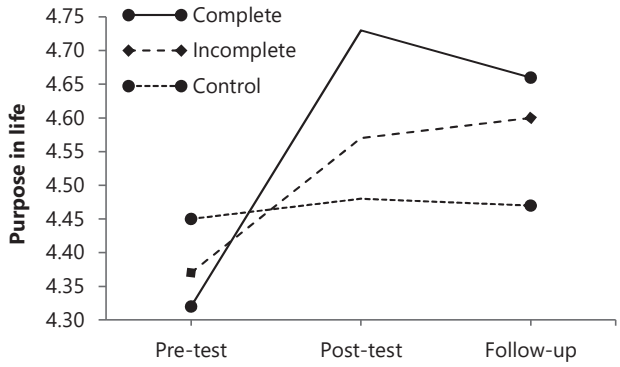

Figure 5.6. *Mean scores on purpose in life for groups across time*

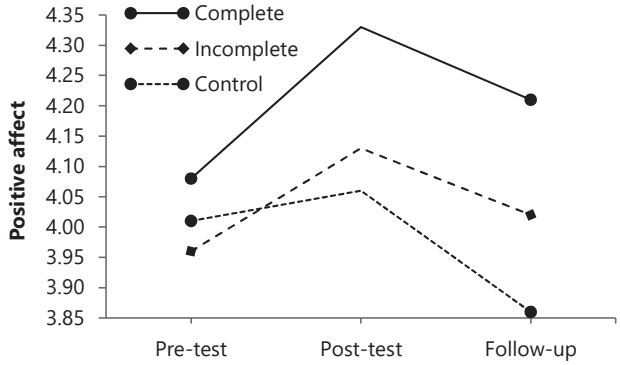

Figure 5.7. *Mean scores on positive affect for groups across time*

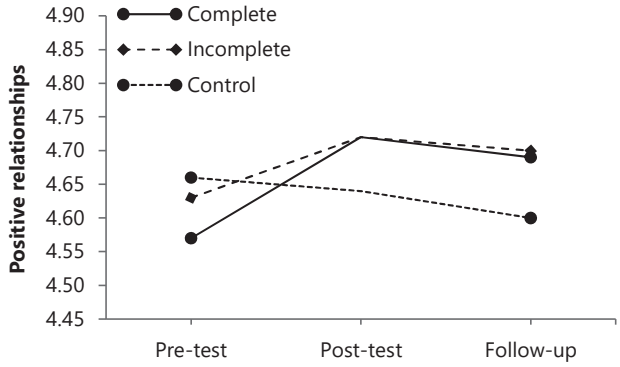

Figure 5.8. *Mean scores on positive relationships for groups across time*

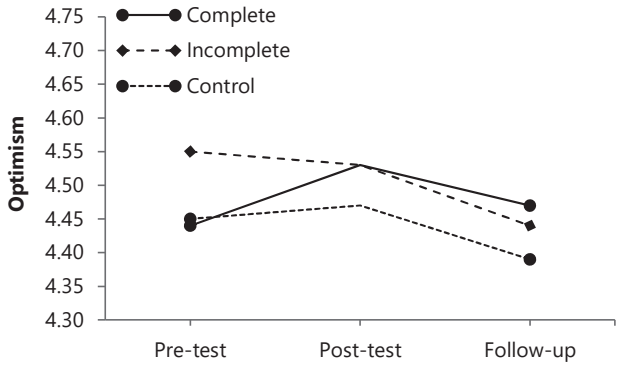

Figure 5.9. *Mean scores on optimism for groups across time*

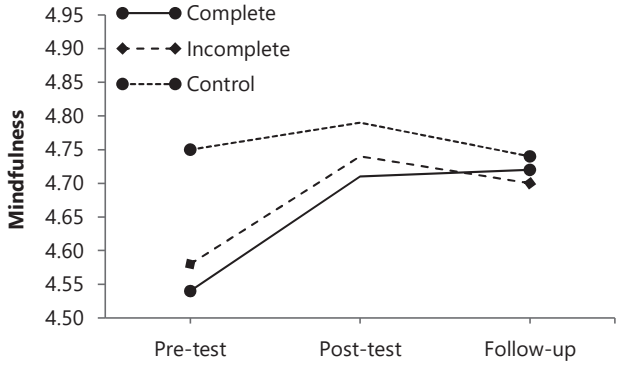

Figure 5.10. *Mean scores on mindfulness for groups across time*

Table 5.6 shows the univariate effects and simple comparisons for each separate indicator of positive adaptation. This table shows significant time x group interaction effects on all indicators of positive adaptation. Simple comparisons showed significant immediate effects on recovery and general health (hypothesis 2a) and long-term effects on all indicators of positive adaptation (hypothesis 2b) with small effect sizes. Figure 5.11, 5.12 and 5.13 visualize these effects (the results for the incomplete programme group are explained in § 5.3.5.3). As can be seen from Figure 5.11, task performance was sustained in the complete programme group at follow-up, compared to a decline in the control group. Based on these results, it is likely to assume that the complete programme contributed to an increase in recovery and general health and these effects were sustained three months after the programme ended. In addition, the programme protected the programme participants from a decline in task performance. Hypothesis 2a and 2b are partially confirmed.

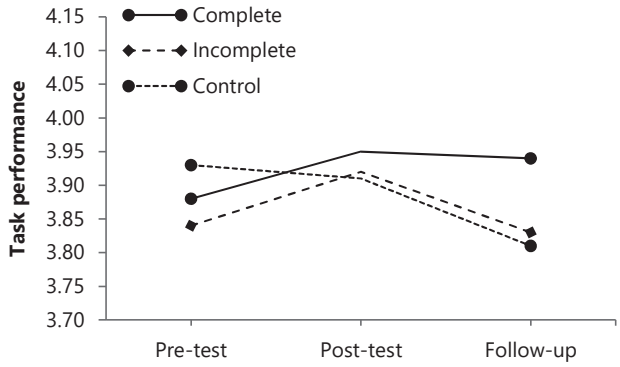

Figure 5.11. *Mean scores on task performance for groups across time*

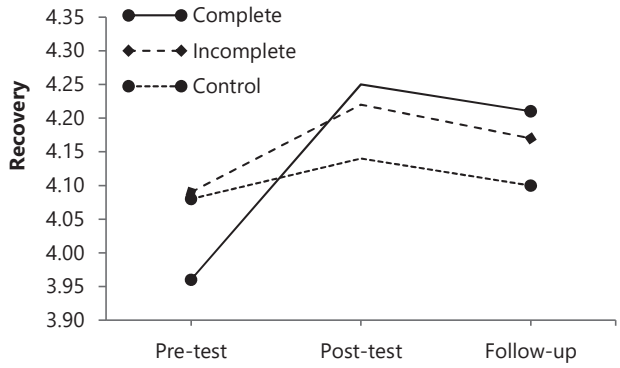

Figure 5.12. *Mean scores on recovery for groups across time*

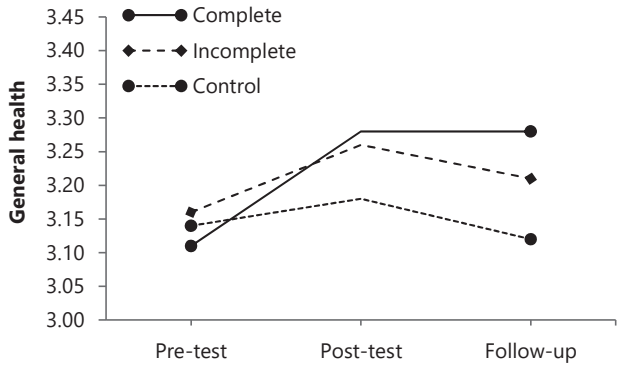

Figure 5.13. *Mean scores on general health for groups across time*

5.3.4. Strength of the working relationship

For the complete-programme group, it was hypothesized that relationship strength would be positively related to (immediate changes in) the resilience resources and to (immediate changes in) positive adaptation (hypothesis 3). To test this hypothesis, we conducted hierarchical regression analyses. Table 5.7 shows that relationship strength significantly contributed to the effect on hope, optimism, self-efficacy, environmental mastery, purpose in life, positive affect, task performance, recovery and general health, but not on mindfulness and positive relationships. Hypothesis 3 is partially confirmed.

5.3.5. Additional analyses for incomplete-programme group

A large number of participants (n = 67) did not complete the ResilienceWise programme. They attended the four coaching sessions, but did not complete the online programme. We conducted additional analyses to examine whether the incomplete ResilienceWise programme was as effective as the complete programme. To that purpose, we examined whether the incomplete-programme group differed from the complete-programme group (n = 91) and from the no-programme control group (n = 140). In addition, we tested our three hypotheses for the incomplete-programme group compared to the no-programme control group.

5.3.5.1. Group differences

First, we examined whether the incomplete-programme group differed from the complete-programme group when it comes to the demographic variables in Table 5.4 and the dependent variables at pre-test measurement in Table 5.5. We found no significant differences. Secondly, we examined whether the incomplete-programme group differed from the control group when it comes to the demographic variables in Table 5.4 and the dependent variables at pre-test measurement in Table 5.5. As can be seen from Table 5.4, the incomplete-programme group consisted of significantly less employees living with a partner than the control group ($\chi^2[1] = 4.21$; $p < .05$), more lower educated employees ($\chi^2[1] = 13.35$; $p < .001$) and more temporary employed employees ($\chi^2[1] = 5.88$; $p < .05$). We found no differences on the dependent variables in Table 5.5 at pre-test measurement.

Table 5.7. *Hierarchical regression analysis summary for working relationship predicting the effect of the complete-programme on eight resilience resources at post-test measurement and on three indicators of positive adaptation at post-test measurement.*

Step 1					**Step 2**				
Predictor variable	**B**	**SE B**	**B**	**R^2**	**Predictor variables**	**B**	**SE B**	**β**	**R^2**
Hope pre-test	0.50	0.07	.58***	.33***	Hope pre-test	0.46	0.07	.54***	.43***
					Working relationship	0.23	0.06	.31***	
Optimism pre-test	0.50	0.09	.49***	.24***	Optimism pre-test	0.48	0.09	.47***	.30***
					Working relationship	0.22	0.08	.25**	
Self-efficacy pre-test	0.60	0.09	.56***	.31***	Self-efficacy pre-test	0.59	0.09	.55***	.38***
					Working relationship	0.19	0.06	.27**	
Environm. mastery pre-test	0.61	0.06	.71***	.50***	Environm. mastery pre-test	0.57	0.06	.66***	.57***
					Working relationship	0.22	0.06	.27***	
Purpose in life pre-test	0.58	0.07	.65***	.43***	Purpose in life pre-test	0.54	0.07	.61***	.50***
					Working relationship	0.25	0.07	.28***	
Positive affect pre-test	0.68	0.09	.65***	.42***	Positive affect pre-test	0.63	0.08	.60***	.54***
					Working relationship	0.31	0.06	.36***	
Mindfulness pre-test	0.37	0.10	.35**	.12**	Mindfulness pre-test	0.36	0.10	.35**	.15**
					Working relationship	0.14	0.09	.15	
Pos. relationships pre-test	0.85	0.06	.85***	.73***	Pos. relationships pre-test	0.84	0.06	.85***	.73***
					Working relationship	0.04	0.06	.04	
Task performance pre-test	0.60	0.09	.59***	.35***	Task performance pre-test	0.55	0.08	.55***	.47***
					Working relationship	0.19	0.04	.34***	
Recovery pre-test	0.55	0.09	.53***	.28***	Recovery pre-test	0.52	0.09	.50***	.34***
					Working relationship	0.27	0.10	.25**	
General health pre-test	0.32	0.08	.40***	.16***	General health pre-test	0.31	0.07	.39***	.26***
					Working relationship	0.15	0.05	.31**	

** p < .01; *** p < .001

5.3.5.2. Effects on resilience resources

To test whether the ResilienceWise programme would enhance resilience resources in the incomplete-programme group compared to the no-programme control group, we conducted a RM-MANOVA on the eight resilience resources with the incomplete-programme group and the control group as the between factor and time as the within factor. RM-MANOVA demonstrated an overall significant positive effect of time on resilience resources ($F[16, 190] = 3.09$; $p < .001$; $\eta_p^2 = .207$). Neither a significant main effect nor interaction effect was found on resilience resources. As we found no significant interaction effect, we did not look at the univariate effects. Our findings indicate that the incomplete programme, compared to no programme, was not effective when it comes to enhancing resilience resources.[9]

5.3.5.3. Effects on positive adaptation

To test whether the ResilienceWise programme would enhance positive adaptation in the incomplete-programme group compared to the no-programme control group, we conducted RM-MANOVA's on the indicators of positive adaptation with the incomplete-programme group and the control group as the between factor and time as the within factor. RM-MANOVA's demonstrated an overall significant positive effect of time on positive adaptation ($F[6, 200] = 3.10$; $p < .01$; $\eta_p^2 = .085$). No significant main effect or interaction effect was found on positive adaptation. As we found no significant interaction effect, we did not look at the univariate effects. Our findings indicate that the incomplete programme, compared to no programme, was not effective when it comes to enhancing positive adaptation.[10]

5.3.5.4. Strength of the working relationship

We conducted hierarchical regression analyses to test whether the strength of the coach-client relationship in the incomplete-programme group would be positively related to changes in resilience resources and positive adaptation immediately after the programme (see hypothesis 3). We found significant results on optimism, task performance and general health[11]. After comparing these results to the results of the complete-programme group, we assumed that relationship strength might predict whether or not a participant

[9] We also conducted a RM-MANOVA to compare the complete-programme group and the incomplete-programme group on the resilience resources. No significant interaction effect was found. Data analyses are available upon request from the author.

[10] We also conducted a RM-MANOVA to compare the complete-programme group and the incomplete-programme group on positive adaptation. No significant interaction effect was found. Data analyses are available upon request from the author.

[11] Data analyses are available upon request from the author.

would finish the online modules in the ResilienceWise programme. To test this assumption, we conducted logistic regression analyses with the two experimental groups (complete and incomplete) as the dependent variable and the resilience resources, the indicators of positive adaptation and relationship strength as predictors. The results show that relationship strength significantly predicts whether or not a participant would finish the online modules in the programme (B = 0.62; SE = 0.24; $p < .05$; OR = 1.85), as does positive affect at pre-test measurement (B = 0.92; SE = 0.44; $p < .05$; OR = 2.51).

5.4. DISCUSSION

Research regarding the effectiveness of resilience-building programmes in the work context is a relative new area of research (Robertson et al., 2015). Even newer is research regarding the effectiveness of resilience-building programmes in the context of organizational change. The current study is the first to study this longitudinally in a large sample size. The first aim of this study was to investigate to what extent the resilience-building programme *ResilienceWise* was effective in enhancing both resilience resources and positive adaptation in office workers who were facing organizational change at work. Regarding the effects on resilience resources, we found that the ResilienceWise programme enhanced the resilience resources of hope, self-efficacy, environmental mastery, purpose in life, positive affect and positive relationships in participants compared to a no-programme control group. These effects were sustained three months after the programme ended. We found no effects on mindfulness and optimism. Regarding the effects on positive adaptation, we found that the programme enhanced recovery from stress and general health in participants compared to a control group. These effects were also sustained three months after the programme ended. In addition, we found that the ResilienceWise programme protected the participants from a decline in task performance at the three-month follow-up. The effect sizes were small to medium which is quite common in resilience-building programmes that are focused on prevention, rather than treatment (Vanhove et al., 2016). These results demonstrate that resilience can be effectively enhanced during organizational change which is consistent with the results of the two previous small pilot studies (Rogerson et al., 2016; Sherlock-Storey et al., 2013). These results are promising for employees in need of psychological resilience during organizational change.

The current study found the strongest effects on the resilience resources of hope, purpose in life and self-efficacy. These have in common that they are goal-related: purpose in life emphasizes the belief that life has a direction (Ryff, 1989); hope emphasizes thinking about ways to achieve goals and the persistence to achieve these goals (Snyder, 2002);

and self-efficacy emphasizes the belief in one's own abilities to achieve desired goals (Bandura, 1997). One explanation for the effects on goal-related resources may be the goal-focused nature of the programme. Coaching in general is regarded as a goal-directed activity, based on principles of self-regulation (Grant, 2012): it 'is essentially about helping individuals regulate and direct their interpersonal and intrapersonal resources in order to create purposeful and positive change in their personal or business lives' (p. 149). Another explanation may be that these resources may be particularly important during organizational change, as change comes with uncertainty and enhances people's need for direction (Van den Heuvel, 2013). In line with the Conservation of Resources theory (Hobfoll, 1989), their enhanced (goal-related) resources may have subsequently enabled employees to better adapt to organizational change as we found stronger effect sizes for positive adaptation at follow-up measurement compared to post-test measurement. Therefore, we may conclude that the ResilienceWise programme not only supported employees in (re)finding direction and (re)gaining feelings of self-control during organizational change, but also enabled them to better adapt to this change.

Following the completion of the programme, the organizational change continued for the participants. This may have affected employees' scores on mindfulness and optimism. Compared to pre-test measurement, the average scores on these resilience resources increased immediately after the programme, but did not reach statistical significance. Enhancing work-related optimism may not be the best strategy when the nature of the organizational change concerns a threat to job security. This may have prevented employees in the current study to be optimistic about their work. When a stressor concerns such a threat to job security, it may be wise to focus on enhancing positive expectancies in general, rather than only for the work context. An explanation for the non-significant effects on mindfulness can be that our programme did not focus exclusively on mindfulness. Resilience-building programmes in the work context that did demonstrate an effect on mindfulness (Burton, Pakenham, & Brown, 2010; Pidgeon, Ford, & Klaassen, 2014) had a more exclusive focus on mindfulness.

The second aim of this study was to investigate whether the immediate effects of the ResilienceWise programme could be explained by the strength of the coach-client working relationship. Our findings indicate that this relationship strength was positively related to changes in hope, optimism, self-efficacy, environmental mastery, purpose in life, positive affect, task performance, recovery and general health, but not to changes in mindfulness and positive relationships. These results extend the existing knowledge base that relationship strength is a consistent common factor explaining coaching effectiveness (De Haan et al., 2016; Graßmann et al., 2020). Researchers studying the effectiveness of *resilience*-building coaching programmes should consider including this key factor as an explanatory variable in their studies.

It should be noted that the findings discussed above are based on a selection of programme participants that finished the complete ResilienceWise programme, which indicates that they attended all face-to-face coaching sessions and completed two online modules in the online Psyfit programme (Bolier et al., 2013). Not included were programme participants that attended all face-to-face coaching sessions, but did not (fully) complete the online programme. In online training programmes, a lack of adherence is quite common (Bolier et al., 2013) and it has also been observed in an online *resilience* training programme (Abbott, Klein, Hamilton, & Rosenthal, 2009). We did not include this incomplete-programme group in our analysis because we aimed to investigate the effectiveness of the complete, 'blended' ResilienceWise programme and not only the coaching part of the programme. However, we did conduct additional analyses to investigate whether the incomplete programme was as effective as the complete programme. Our findings showed that the incomplete programme was not effective in enhancing resilience resources and positive adaptation, compared to no programme. When we compare these findings to the complete ResilienceWise programme, it is evident that only the complete programme was effective.

The above findings raise the question as to which factors could explain the different effects for the complete-programme group compared to the incomplete-programme group. These groups did not differ when it comes to the demographic variables and the dependent variables at pre-test measurement. In the current study, we found two factors that partly explain these differences: the strength of the relationship between the coach and the client and positive affect at pre-test measurement. Both factors predicted whether or not participants would complete the online Psyfit modules. The effect for positive affect could be explained by the broaden-and-build theory of positive emotions (Fredrickson, 2009). This theory suggests that positive emotions broaden a person's awareness and that this broadened awareness encourages them to try out new actions. Hence, positive affect may have contributed to participants being more open to try out the online modules. A lower score on positive affect at pre-test measurement may be due to the different impact of the organizational change on programme participants. Therefore, it is important to include a measure for stressor load in future studies (Chmitorz et al., 2018). The effect for relationship strength could be explained by social exchange theory: in high-quality working relationships, clients and coaches are more likely to exchange psychological benefits (e.g. openness and trust) that enhance the possibility to achieve coaching outcomes (Graßmann et al., 2020). This endorses the importance of including relationships strength as an explanatory factor in resilience coaching programmes.

5.4.1. Limitations

A clear limitation of the current study was that it was not a randomized control trial (RCT). Without randomization, the experimental and control group cannot be regarded as equivalent which limits the internal validity of this study. Differences between the complete-programme group and the no-programme control group were found on gender, level of education, tenure, self-efficacy and mindfulness. If we consider a high education, permanent employment, self-efficacy and mindfulness as resources, then the complete-programme group had less resources at the start of the programme than the control group. A confounding variable that may have negatively affected the results of this study, is that the experimental group experienced an additional stressor – changing governmental policies – over and above the merger that both groups were facing. Despite this limitation, we were able to create a between-group design which is regarded as more rigorous than a within-group design (Vanhove et al, 2016); we recruited a large sample enhancing the reliability of our findings; we gathered longitudinal data; and conducted research in a natural setting enhancing the external validity of our study.

Another limitation of this study – and most studies regarding the effectiveness of resilience-building programmes (Baumeister & Alghamdi, 2015) – is that positive adaptation was measured by self-report measures. As the visible manifestation of the process of psychological resilience, positive adaptation is preferably measured by objective, behavioural measures, such as personnel data and other ratings (Britt, Shen, Sinclair, Grossman, & Klieger, 2016). For logistical and ethical reasons, we did not include these measures: organizing a large-scale effectiveness study during organizational change was logistically challenging enough by itself; employees and team leaders shifted positions which interfered with collecting other ratings; and there was no trusted third party procedure to secure confidentiality of personnel data. Without objective data, the effects of the programme may be overestimated (De Haan, Duckworth, Birch, & Jones, 2013), reflecting some desire of individual participants to offer validation to the people who administered the programme and/or some desire to rationalize the time and effort they themselves put into the programme (Baumeister & Alghamdi, 2015).

A final limitation of this study is that we did not measure stressor load which is nowadays advised in studies regarding the effectiveness of resilience-building programmes (Chmitorz et al., 2018). Therefore, we do not know to what extent the organizational change affected programme participants differently and how this has affected our study results.

5.4.2. Recommendations for future research

To date, only the current study and two other studies (Rogerson et al., 2016; Sherlock-Storey et al., 2013) have examined the effectiveness of resilience-building programmes during organizational change. The results of these studies are promising. However, more research is needed. Therefore, we first propose conducting more research to establish the effectiveness of resilience-building programmes during organizational change. Such studies are preferably set up as 1) longitudinal studies; 2) with a randomized controlled design; 3) that use objective and/or behavioural measures to assess positive adaptation over time; and 4) that control for stressor load.

The ResilienceWise programme was set up as a resource-based resilience-building programme. An important decision to be made in the design of such programmes is on the selection of resources. In an ideal situation the selection would be based on a proper needs assessment and a review of the literature (Bartholomew et al., 2016). However, the literature on resilience-building programmes gives little clues as to which resilience resources are enhanced best (Robertson et al., 2015) and under what stressful circumstances (Vanhove et al., 2016). A better understanding is needed on the role specific resilience resources play in adapting to specific workplace stressors (Baumeister & Alghamdi, 2015). In the current study, we argued that goal-related resources, such as hope, self-efficacy and purpose in life, may be important during organizational change. Therefore, the second area of research worth exploring concerns the role which specific (goal-related) resilience resources play in adapting to organizational change.

The third area of research worth exploring is that of the role of non-specific factors in the effectiveness of resilience coaching. Non-specific factors are those factors that are common to all approaches to coaching (De Haan et al., 2013). In this study, we addressed the most consistent common factor found in the coaching literature: relationship strength. However, this is not the only common factor that has been identified in the literature. Other common factors worth investigating are client expectations, the coach allegiance to their coaching approach, empathic understanding of the coach and the client context (De Haan et al., 2013). This area of research may give new insights as to which ingredients make resilience-building coaching programmes effective.

5.4.3. Recommendations for practice

To protect employees from the potential negative effects of change, we recommend companies consider offering their employees a resilience-building programme during organizational change. The current study showed that an effective resilience-building strategy in times of change may be to enhance personal resources of employees, especially goal-related resources, such as hope, purpose in life and self-efficacy. Based on

the Conservation of Resources theory (Hobfoll, 2009), we argued that such resources may be under threat of depletion during organizational change and therefore need to be protected or even enhanced.

For programme effectiveness, it is important to stimulate employees to complete the whole programme. The current study showed that the ResilienceWise programme was effective for those participants that finished the complete programme, that is both the four coaching sessions and the two online Psyfit modules. The programme was not effective for those participants who did not complete the online modules. The current study showed that one key to enhance participants' commitment to in between session work is to enhance their positive affect. This implies that coaches should be aware of the emotional state of their clients at the beginning of the programme and support them in cultivating positive emotions. The positive psychology literature offers many options to accomplish this, for example, by teaching clients gratitude exercises, positive writing and/or loving-kindness meditation (Meyers, Van Woerkom, & Bakker, 2013; Sin & Lyubomirsky, 2009; Zeng, Chiu, Wang, Oei, & Leung, 2015). In addition, our study showed that a second key to enhance participants commitment to in between session work may be a strong coach-client working relationship. A tool that coaches can use to monitor, discuss and enhance the strength of this relationship is the Session Rating Scale (SRS; Duncan et al., 2003). We recommend coaches administer this short scale at the end of each coaching session. This may positively impact the strength of the working relationship, which in turn may positively impact programme effectiveness.

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Chapter 6

The effectiveness of the psychological resilience-building programme 'ResilienceWise': A replication and revision

'I can be changed by what happens to me, but I refuse to be reduced by it.'[12]

[12] Maya Angelou

The effectiveness of the psychological resilience-building programme 'ResilienceWise': A replication and revision

Abstract

The aim of the current study is to replicate and improve a previous study that investigated the effectiveness of the psychological resilience-building programme *ResilienceWise* (IJntema, Ybema, Burger, & Schaufeli, 2020). This resource-based programme was developed to enhance psychological resilience, and more specifically resilience resources, in employees who were facing organizational change. The current study was set up as a 2 (experimental group, control group) x 3 (pre-test, post-test, three-month follow-up) quasi-experimental design. Participants were employees of a large Dutch insurance company, eight in the experimental group and ten in the no-programme control group. Despite the low statistical power, due to the very small sample size, significant programme effects were found: a) positive immediate and follow-up effects on the resilience resources of hope, optimism, self-efficacy, purpose in life and satisfaction with life; b) an immediate effect on employability and recovery from stress as indicators of positive adaptation; and c) a follow-up effect on employability. No programme effects were found for positive relationships and mindfulness. Overall, the results of this study confirm the main findings of the previous study and suggest that the *ResilienceWise* programme is an effective resilience-building programme during organizational change.

6.1. INTRODUCTION

The current study is a replication and revision of the study described in the previous chapter, regarding the effectiveness of the psychological resilience-building programme *ResilienceWise* (in Dutch: *VeerkrachtWijzer*; IJntema, Ybema, Burger, & Schaufeli, 2020). In the field of resilience-building programmes, it is not common practice to conduct replication studies. We found only one such study (Liossis, Shochet, Millear, & Biggs, 2009) which is a replication and revision of the study regarding the effectiveness of the *Promoting Adult Resilience* (PAR) programme (Millear, Liossis, Shochet, Biggs, & Donald, 2007). Replication studies can serve different functions (Schmidt, 2009): to control for sampling error (chance result), to control for artefacts (lack of internal validity), to control for fraud, to generalize results to a larger or different population and to verify the underlying hypothesis of a previous experiment. Liossis and colleagues (2009) aimed to confirm the hypotheses of their previous experiment (Millear et al., 2007) and to generalize the results to a different population. They were able to replicate the main findings of their initial study, namely that the PAR programme improved coping self-efficacy and reduced stress in participants immediately and six months after the programme in comparison to a no-programme control group. Following their example, the aim of the current replication study is also to confirm the hypotheses of the previous experiment (IJntema et al., 2020) and to generalize the results to a different population. In accordance with recommendations from the initial study (IJntema et al., 2020), we made some adjustments to the outcome measures in the current study. Therefore, the current study is not a mere replication, but also a revision of the initial study. Below, we describe the initial and (improved) current study in more detail.

6.1.1. Initial study

The aim of the initial study (IJntema et al., 2020) was to investigate how effective the ResilienceWise programme was in enhancing psychological resilience in employees facing organizational change. Psychological resilience was defined as the dynamic process of adapting well in the face of a stressful event or circumstance (*stressor*; American Psychological Association, 2020; IJntema, Burger, & Schaufeli, 2019; Infurna & Luthar, 2018; Luthar, Cicchetti, & Becker, 2000; Windle, 2011). This dynamic process is depicted in Figure 5.1 and explained in § 5.1.1. More specifically, the initial study investigated whether the ResilienceWise programme was effective in enhancing eight resilience resources – hope, self-efficacy, environmental mastery, purpose in life, positive affect, positive relationships and mindfulness – and three indicators of positive adaptation – task performance, recovery and general health (see Table 5.1 for the definitions of these concepts).

The initial study was set up as a quasi-experimental field study using a 2 (experimental group, no-programme control group) x 3 (pre-test, post-test, three-month follow-up) design. Programme participants were 91 health care office workers from a large Dutch insurance company facing organizational change. The no-programme control group consisted of 140 office workers from the same company. The results showed that the programme was effective in enhancing the resilience resources of hope, self-efficacy, environmental mastery, purpose in life, positive affect and positive relationships in employees immediately after the programme ended and at the three-month follow-up. The strongest effects were found for hope, self-efficacy and purpose in life. No effects were found for mindfulness and optimism. Regarding positive adaptation, the results showed that the ResilienceWise programme contributed to an increase in recovery and general health and that these effects were sustained three months after the programme ended. In addition, the programme protected the participants from a decline in task performance at the three-month follow-up. By showing that resilience can be effectively enhanced during organizational change, this study confirmed the results of two small pilot studies that examined the effectiveness of resilience-building programmes during organizational change (Rogerson, Meir, Crowley-McHattan, McEwen, & Pastoors, 2016; Sherlock-Storey, Moss, & Timson, 2013). Additionally, this study extended the existing evidence base that a resource-based approach can be an effective resilience-building strategy in the work context (Vanhove, Herian, Perez, Harms, & Lester, 2016).

The unique contribution of the initial study was that it not only investigated programme effectiveness, but also examined which ingredients made the ResilienceWise programme effective. The strength of the relationship between the coach and the client was chosen as an explanatory factor as the thirteen-week ResilienceWise programme was set up as a coaching programme, consisting of four face-to-face coaching sessions, supported by the online self-help programme 'Psyfit' (psychological fitness online; www.psyfit.nl; Bolier et al., 2013). Relationship strength is characterized by three features: the bond that the coach and client develop, their mutual agreement on goals to be achieved, and their agreement on the assignments to reach these goals (Bordin, 1979). Research regarding the effectiveness of coaching programmes has shown that the strength of the relationship plays a key role in explaining coaching outcomes (De Haan, Grant, Burger, & Eriksson, 2016; Graßmann, Schölmerich, & Schermuly, 2020; Lai & McDowall, 2014). The results of the initial study supported this finding: relationship strength was positively related to changes in hope, optimism, self-efficacy, environmental mastery, purpose in life, positive affect, task performance, recovery and general health, but not to changes in mindfulness and positive relationships. These results indicated that a relationship strength not only plays a role in explaining the effects of coaching

programmes in general (De Haan et al., 2016; Graßmann et al., 2020), but also in explaining the effect of *resilience* coaching programmes.

6.1.2. Current study

The current study is both a replication and a revision of the initial study. It is a replication because the effectiveness of the same resilience-building programme 'ResilienceWise' was examined with a different sample of employees in the same insurance company (Schmidt, 2009). It is a revision because we made some adjustments to the outcome variables. An overview of the outcome variables targeted in the current study can be found in Table 6.1: eight resilience resources and two indicators of positive adaptation. As recommended in the initial study, optimism was measured in general, rather than only in relation to work. Positive affect was replaced by satisfaction with life and environmental mastery by active coping to better reflect the content of the programme. Employees' task performance was not measured because tasks often change during organizational change. Instead, we measured employability (for information on the selection of outcome variables, see IJntema et al., 2020). Similar to the initial study, we formulated the following hypotheses:

Hypothesis 1a: The ResilienceWise programme enhances hope, self-efficacy, optimism, purpose in life, active coping, satisfaction with life, positive relationships and mindfulness in the experimental group compared to a control group.

Hypothesis 1b: The immediate effects on the eight resilience resources (hypothesis 1a) are still present three months after completion of the programme.

Hypothesis 2a: The ResilienceWise programme enhances recovery and employability in the experimental group compared to a control group.

Hypothesis 2b: The immediate effects on the two indicators of positive adaptation (hypothesis 2a) are still present three months after completion of the programme.

Hypothesis 3: In the experimental group, relationship strength is positively related to (changes in) resilience resources and to (changes in) positive adaptation immediately after completion of the programme.

Table 6.1. *Definitions of eight resilience resources and two indicators of positive adaptation that are targeted in the ResilienceWise programme*

Category	Study outcomes	Definition
Resilience resources	Hope	'The perceived capability to derive pathways to desired goals, and motivate oneself via agency thinking to use those pathways' (Snyder, 2002, p. 249).
	Optimism	'The extent to which people hold generalized favourable expectancies for their futures' (Carver, Scheier, & Segerstrom, 2010, p. 879).
	Self-efficacy	A judgment of one's ability to organize and execute courses of actions to produce expected outcomes (Bandura, 1997).
	Purpose in life	The belief that one's life has direction and meaning (Ryff, 1989).
	Active coping	A dimension of problem-focused coping and aimed at solving the problem one is facing (Schreurs, Van De Willige, Brosschot, Tellegen, & Graus, 1993).
	Satisfaction with life	'A global assessment of a person's quality of life according to his chosen criteria' (Shin & Johnson, 1978, p. 478 in Diener, Emmons, Larsen, & Griffin, 1985, p. 71).
	Mindfulness	'A receptive attention to and awareness of present moment events and experiences' (Brown, Ryan, & Creswell, 2007, p. 212).
	Positive relationships	'The possession of quality relations with others' (Ryff & Keyes, 1995, p. 720).
Indicators of positive adaptation	Employability	'The relative chances of finding and maintaining different kinds of employment' (Brown, Hesketh, & Williams, 2003, p. 111).
	Recovery	'The ability to bounce back or recover from stress' (Smith et al., 2008, p. 194).

6.2. METHOD

Table 6.2 compares the initial and current study on the following dimensions: design, setting, participants, programme, measurement and data-analysis (suggested by Coyne, Cook, & Therrien, 2016). As can be seen from this table, the current study is identical to the initial study when it comes to the design and programme. Therefore, we refer to the previous chapter for a more detailed description. The current study differs slightly from the initial study when it comes to the setting, participants, measurement and data-analysis. Below, we explain these in more detail.

6.2.1. Setting, procedure and participants

In the initial study (IJntema et al., 2020), an entire health care office department from a large Dutch insurance company was invited to participate in the programme as their job security was threatened because of changing governmental policies and a merger. In the current study, a specific group of thirty office workers from a different health department of the same insurance company was invited to participate in the programme as their job security was threatened because of reductions in the workforce. Similar to the initial study, participation in the programme was on a voluntary basis. Unlike the initial study, there was less encouragement to actually take part in the programme from management, resulting in a lower response rate. Fourteen employees expressed their interest in the programme. They received a brochure with additional information about the programme. Eleven employees decided to take part in the programme. These employees were randomly assigned to one of three independent coaching psychologists and invited to complete a thirty-minute online assessment before the first coaching session. Participants were informed that the anonymized data of the online assessment would be used for research purposes. The three participants who did not take part in the programme, decided that the programme did not meet their individual needs and chose to take part in another programme. Eight of the eleven participants who started the programme, completed the questionnaires at all time points. This group formed our experimental group.

Thirty office workers from a different department, who's job security was also threatened because of reductions in the workforce, were approached as the control group. As in the initial study, this control group was asked to participate in a study to measure the long-term (in)stability of mental health. Thirteen employees expressed their interest to take part in this study. Three of them withdrew because of a lack of time. The final control group sample consisted of ten employees who completed the questionnaires at all time points. Figure 6.1 summarizes the number of participants in the experimental and control group at the different time points and the response and drop-outs rates.

The characteristics of the experimental and control group are described in Table 6.2 (gender, mean age, cohabiting or not, level of education). The total drop-out rate in the experimental group was 27.3%. The reason for drop-out was that the programme did not meet the needs of these three employees. One employee would not benefit from the programme because of a very high score on all measures. Two employees needed therapy rather than coaching. There was no drop-out in the control group. As a token of appreciation, participants in both the experimental and control group received the book 'Mental Fitness' after the follow-up measurement (Bolier, Haverman, & Walburg, 2010).

Table 6.2. *Comparison of the initial study and the current replication and revision study on six study dimensions.*

Study dimension	Initial study (Untema et al., 2020)	Current study: replication and revision
Design	2 (experimental group; control group) x 3 (pre-test; post-test; three-month follow-up) quasi experimental design	Idem
Setting		
Company	Large Dutch insurance company	Idem
Stressor	Organizational change due to changing governmental policies and a merger	Organizational change due to reductions in the workforce
Participants		
Experimental group	91 employees (health services department): 69.2 % women; mean age 41.9 years; 71.4 % cohabiting; 39.6 % ≥ bachelor degree	8 employees (change management department): 25 % women; mean age 47.8 years; 100 % cohabiting; 62.5 % ≥ bachelor degree
No-programme control group	140 employees (different departments from experimental group): 49.3% women; mean age 41.3 years; 81.4 % cohabiting; 61.4 % ≥ bachelor degree	10 employees (human resources department): 100 % women; mean age 45.1 years; 90 % cohabiting; 90 % ≥ bachelor degree
Programme		
Aim	Enhancing the process of psychological resilience by enhancing resilience resources	Idem
Mode of delivery	Blended: 4 face-to-face 1-hour coaching sessions every 4 weeks; 2 Psyfit e-modules in between coaching sessions (i.e. personal goal setting, mastering your life, optimistic thinking, positive emotions, positive relationships, mindfulness; Bolier et al., 2013)	Idem
Coaches	8 female licenced psychologists (see chapter 5 for specific criteria)	3 of the 8 licenced psychologists
Location	Coaching sessions took place on the clients work location.	Idem
Measurement		
Hope	Work-adjusted Dutch translation (Ouweneel, 2012) of the 6-item State Hope Scale (Snyder et al., 1996)	Idem, but not work-adjusted; $\alpha_{pre\text{-}test}$ = .86; $\alpha_{post\text{-}test}$ = .72; $\alpha_{follow\text{-}up}$ = .77
Optimism	Work-adjusted Dutch translation (Peters, Rius-Ottenheim, & Giltay, 2013) of the 6-item Revised Life Orientation Test (Scheier, Carver, & Bridges, 1994)	Idem, but not work-adjusted; $\alpha_{pre\text{-}test}$ = .87; $\alpha_{post\text{-}test}$ = .82; $\alpha_{follow\text{-}up}$ = .75
Self-efficacy	5-item General Work Efficacy Scale, developed by Schaufeli following the recommendations of Bandura (Ouweneel, 2012)	Dutch translation (Teeuw, Schwarzer, & Jerusalem, 1994) of the 10-item Generalized Self-Efficacy scale (Schwarzer & Jerusalem, 1995); $\alpha_{pre\text{-}test}$ = .87; $\alpha_{post\text{-}test}$ = .86; $\alpha_{follow\text{-}up}$ = .88

Purpose in life	Corresponding 6-item scale of the Amsterdam Wellbeing Scale (AWS; Van Dierendonck, 2005), which is the Dutch translation of the psychological wellbeing scales (Ryff, 1989)	Idem; $\alpha_{pre\text{-}test}$ = .80; $\alpha_{post\text{-}test}$ = .69; $\alpha_{follow\text{-}up}$ = .85
Positive affect → satisfaction with life	Dutch version (Schaufeli & Van Rhenen, 2006) of the 6-item positive emotions scale of the Job-related Affective Wellbeing Scale (JAWS; Van Katwyk, Fox, Spector, & Kelloway, 2000)	Replaced by Dutch translation (Arrindell, Heesink, & Feij, 1999) of the 5-item Satisfaction With Life Scale (SWLS; Diener et al., 1985); $\alpha_{pre\text{-}test}$ = .93; $\alpha_{post\text{-}test}$ = .91; $\alpha_{follow\text{-}up}$ = .75
Positive relationships	Corresponding 6-item scale of the AWS (Van Dierendonck, 2005)	Idem; $\alpha_{pre\text{-}test}$ = .91; $\alpha_{post\text{-}test}$ = .81; $\alpha_{follow\text{-}up}$ = .79
Environmental mastery → active coping	Corresponding 6-item scale of the AWS (Van Dierendonck, 2005)	Replaced by 6-item active coping scale of the Utrecht Coping List (UCL; Schreurs et al., 1993); $\alpha_{pre\text{-}test}$ = .44; $\alpha_{post\text{-}test}$ = .65; $\alpha_{follow\text{-}up}$ = .76
Mindfulness	Dutch version (Schroevers, Nyklíçek, & Topman, 2008) of the 6-item Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003)	Idem; $\alpha_{pre\text{-}test}$ = .87; $\alpha_{post\text{-}test}$ = .89; $\alpha_{follow\text{-}up}$ = .92
Task performance → employability	Dutch translation and adaptation (Reijseger, Peeters, Taris, & Schaufeli, 2016) of the 9-item Task Performance Questionnaire (Goodman & Svyantek 1999)	Replaced by 4-item Perceived Employability scale (De Cuyper, Bernhard-Oettel, Berntson, De Witte, & Alarco, 2008); $\alpha_{pre\text{-}test}$ = .93; $\alpha_{post\text{-}test}$ = .79; $\alpha_{follow\text{-}up}$ = .90
Recovery	Work-adjusted Dutch translation (Leontjevas, De Beek, Lataster, & Jacobs, 2014) of the 6-item Brief Resilience Scale (Smith et al., 2008)	Idem, but not work-adjusted; $\alpha_{pre\text{-}test}$ = .92; $\alpha_{post\text{-}test}$ = .92; $\alpha_{follow\text{-}up}$ = .92
General health	Dutch translation (Koeter & Ormel, 1991) of the 12-item version of the General Health Questionnaire (GHQ-12; Goldberg, 1972).	Not measured in this study
Coaching relationship	Unpublished Dutch translation (by Waringa and Ribbers in 2011) of the 12-item Working Alliance Inventory, short form for coaching (WAI-SC; Baron & Morin, 2009)	Idem; $\alpha_{post\text{-}test}$ = .94
Analysis		
Programme effect on resources and positive adaptation	Repeated measures multivariate analysis of variance (RM-MANOVA)	Repeated measures univariate analysis of variance (RM-ANOVA's)
Predictor coaching relationship	Hierarchical regression analyses	Idem

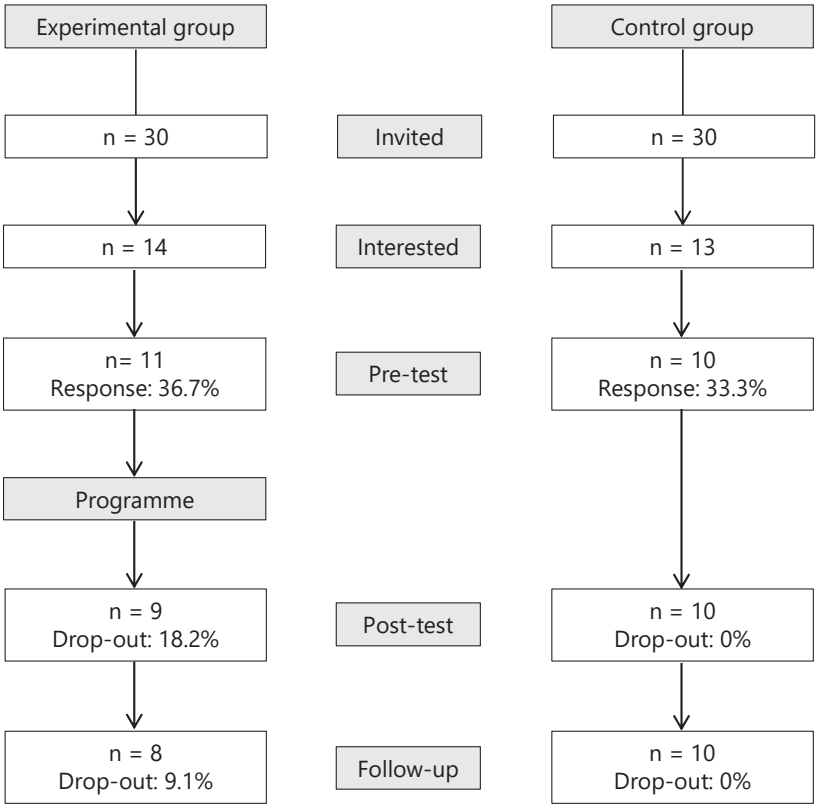

Figure 6.1. *Flow of participants in the experimental and control group through each stage of the quasi-experiment, including response and drop-out rates*

6.2.2. Measures

Table 6.2 gives an overview of the measures used in the current study. Because of the small samples size, the data of the experimental and control group were combined (n = 18) to calculate the internal consistencies of the scales at the three different time points. Table 6.2 shows that the internal consistencies were sufficient, except for active coping at pre-test measurement. This scale was dropped from the analysis because the internal consistency fell below the absolute minimum of .60 (Nunnally & Bernstein, 1994). The scales of hope, optimism, self-efficacy, purpose in life, positive relationships and recovery were measured with a six-point Likert scale. Satisfaction with life and employability were measured with a five-point Likert scale. The scoring on all these scales ranged from completely disagree (1) to completely agree (5 or 6, respectively). Mindfulness was measured with a six-point Likert scale ranging from almost always (1) to almost never (6):

a high score indicates the presence of mindfulness. Finally, the coaching relationship was measured with a seven-point Likert scale ranging from never (1) to always (7).

6.2.3. Data analysis

Because of the small number of participants, the statistical power was too low to conduct repeated-measures multivariate analysis of variance (RM-MANOVA) to test hypothesis 1 and 2. Therefore, we used repeated measurement univariate analyses of variances (RM-ANOVA's) in SPSS 24. All other data analyses in the current study were the same as in the initial study (see Table 6.2).

6.3. RESULTS

6.3.1. Preliminary analyses

Because of the small sample size, we were unable to split the experimental group into a complete- and incomplete-programme group as we did in the initial study. 'Complete-programme group' refers to participants that attended all four coaching sessions and completed the expected two e-modules in the online training which were four participants in the current study. 'Incomplete-programme group' refers to participants that did not adhere to the complete programme: they attended all coaching sessions, but did not complete the online training. In the current study, the incomplete programme group consisted of four participants. Of these four participants, three completed only one e-module and one participant did not complete any e-module. As we did not split groups, all programme participants were placed into one experimental group (n = 8). The results of this group were compared to the results of the control group (n = 10).

To examine possible sample differences, we tested with Fisher's exact tests – used for small sample sizes – whether the experimental and control group differed in age, gender, marital status and level of education (see under 'Participants' in Table 6.2). The only significant difference was found on gender: the experimental group consisted of mostly men (75%), whereas the control group consisted of only women ($\chi^2 = 11.25$; df = 1; $p < .01$). To further check for possible differences, we tested with independent t-tests whether the experimental and control group differed on the dependent variables at pre-test measurement (see Table 6.3). As can be seen from Table 6.3, the experimental group scored significantly lower than the control group on all dependent variables, except for purpose in life and mindfulness. We did not conduct drop-out analyses: the number of participants was too low in the experimental group and there was no drop-out at all in the control group.

Table 6.3. *Means and standard deviations of the dependent and predictor variables for the experimental and control group at three time points; t-test results to check for significant differences on the dependent variables between the experimental and control group at pre-test measurement.*

	Experimental group (n = 8)						**Control group (n = 10)**						**Experimental versus control group**	
	T0		**T1**		**T2**		**T0**		**T1**		**T2**		**T0**	
	M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**t**	**p**
Resilience resources														
Hope	4.15	0.57	4.96	0.58	5.04	0.51	4.77	0.58	4.80	0.40	4.73	0.53	-2.26	< .05
Optimism	4.10	0.87	4.94	0.75	4.65	0.62	5.12	0.39	5.08	0.66	5.15	0.42	-3.06	< .05
Self-efficacy	4.24	0.55	4.95	0.61	5.04	0.60	4.91	0.37	4.83	0.38	4.87	0.30	-3.10	< .01
Satisfaction with life	4.78	1.13	5.58	0.89	5.83	0.76	6.02	0.65	6.16	0.64	5.90	0.58	-2.77	< .05
Purpose in life	3.65	0.81	4.40	0.97	4.60	0.71	4.35	0.63	4.23	0.55	4.27	0.96	-2.08	n. s.
Positive relationships	4.25	1.15	4.73	0.99	4.77	0.83	5.25	0.42	5.25	0.53	5.17	0.67	-2.57	< .05
Mindfulness	4.27	0.75	4.81	0.83	4.77	0.89	4.70	0.53	4.75	0.50	4.68	0.72	-1.43	n. s.
Positive adaptation														
Recovery	3.46	1.06	4.19	0.96	4.27	0.78	4.40	0.57	4.50	0.65	4.77	0.65	-2.27	< .05
Employability	2.69	0.74	3.31	0.51	3.25	0.74	3.45	0.69	3.25	0.68	3.78	0.69	-2.26	< .05
Predictor														
Coaching relationship			6.39	0.50										

6.3.2. Immediate and long-term effects on resilience resources

It was hypothesized that participating in the ResilienceWise programme compared to not participating would have a positive immediate (hypothesis 1a) and a long-term effect (hypothesis 1b) on resilience resources. Table 6.3 shows the means and standard deviations of the resilience resources for the experimental and control group at the three time points. RM-ANOVA's for each separate resilience resource demonstrated that significant time x group interaction effects were found on hope, optimism, self-efficacy, satisfaction with life and purpose in life (see Table 6.4).

Table 6.4. *Results of repeated measures ANOVA's for the dependent variables with between factor group (experimental group; control group) and within factor 'time' (pre-test; post-test; follow-up)*

	Main effect group (df = 1, 16)			**Main effect time (df = 2, 32)**			**Interaction effect time x group (df = 2, 32)**		
	F	**P**	**η_p^2**	**F**	**p**	**η_p^2**	**F**	**p**	**η_p^2**
Resilience resources									
Hope	0.05	n. s.	.003	14.46	< .001	.475	14.79	< .001	.480
Optimism	4.01	n. s.	.200	9.96	< .001	.384	11.09	< .001	.409
Self-efficacy	0.43	n. s.	.026	9.68	< .01	.377	13.01	< .001	.448
Satisfaction with life	3.66	n. s.	.186	7.59	< .01	.322	8.96	< .01	.359
Purpose in life	0.04	n. s.	.003	4.23	< .05	.209	6.45	< .01	.287
Pos. relationships	3.71	n. s.	.188	1.78	n. s.	.100	2.57	n. s.	.138
Mindfulness	0.10	n. s.	.006	2.42	n. s.	.131	2.07	n. s.	.114
Positive adaptation									
Recovery	2.96	n. s.	.156	11.66	< .001	.422	3.33	< .05	.172
Employability	0.90	n. s.	.053	2.32	n. s.	.127	6.16	< .01	.278

To investigate whether the five significant interaction effects concerned immediate and/or long-term effects, simple comparisons were conducted comparing post-test versus pre-test measurement and follow-up versus pre-test measurement, respectively (see Table 6.5). As can been seen from Table 6.5, significant immediate and long-term effects were found on hope, optimism, self-efficacy, satisfaction with life and purpose in life with large effect sizes. Figures 6.2, 6.3, 6.4, 6.5 and 6.6 visualize these results and show that they are in the expected direction: the average scores in the experimental group increased, whereas the average scores of the control group remained relatively stable across time. On average, the scores on positive relationships and on mindfulness increased in the experimental group (see Figure 6.7 and 6.8), however no significant interaction effects were found for these two resilience resources. Hence, hypothesis 1a and 1b are partially confirmed.

Table 6.5. *Simple comparisons of the scores on the dependent variables of the experimental and control group at post-test versus pre-test measurement (to measure immediate programme effects) and follow-up versus pre-test measurement (to measure long-term programme effects).*

	Interaction effect time x group					
	Post-test versus pre-test (df = 1, 16)			**Follow-up versus pre-test (df = 1, 16)**		
	F	**P**	**η_P^2**	**F**	**p**	**η_P^2**
Resilience resources						
Hope	17.97	< .01	.529	16.81	< .01	.512
Optimism	18.93	< .001	.542	11.19	< .01	.412
Self-efficacy	13.76	< .01	.462	16.82	< .01	.512
Satisfaction with life	7.74	< .05	.326	14.49	< .01	.475
Purpose in life	7.34	< .05	.314	16.53	< .01	.508
Positive adaptation						
Recovery	6.40	< .05	.286	2.05	n. s.	.113
Employability	17.76	< .01	.526	7.05	< .05	.306

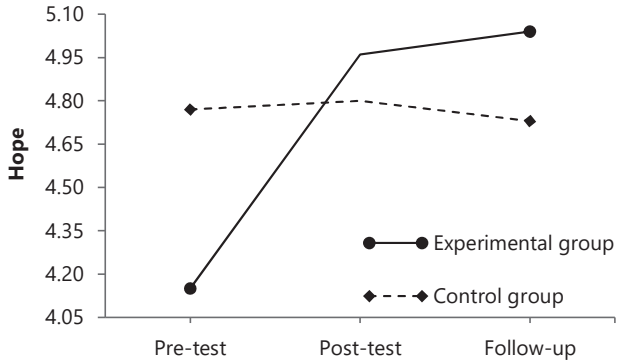

Figure 6.2. *Mean scores on hope for groups across time*

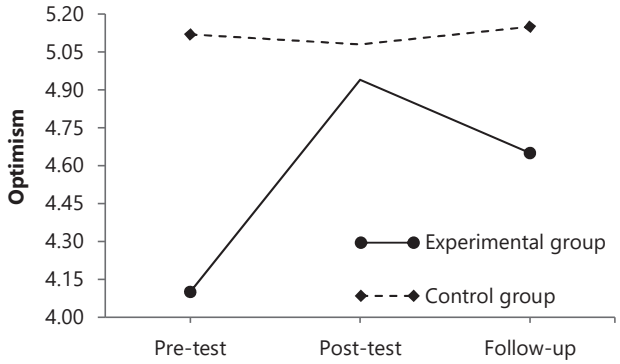

Figure 6.3. *Mean scores on optimism for groups across time*

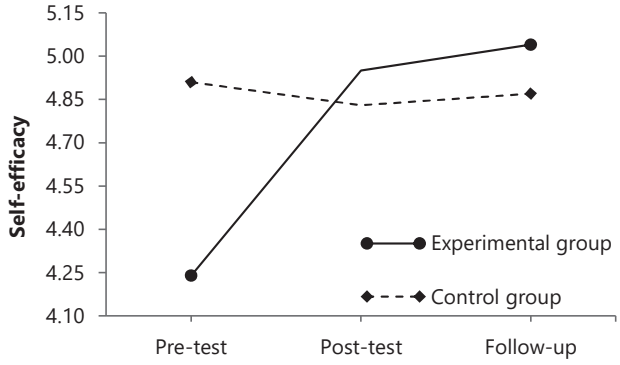

Figure 6.4. *Mean scores on self-efficacy for groups across time*

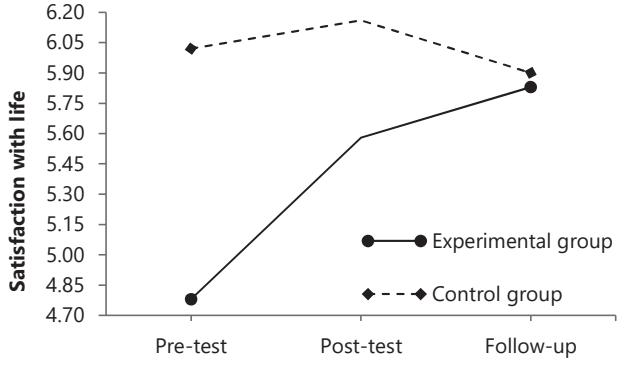

Figure 6.5. *Mean scores on satisfaction with life for groups across time*

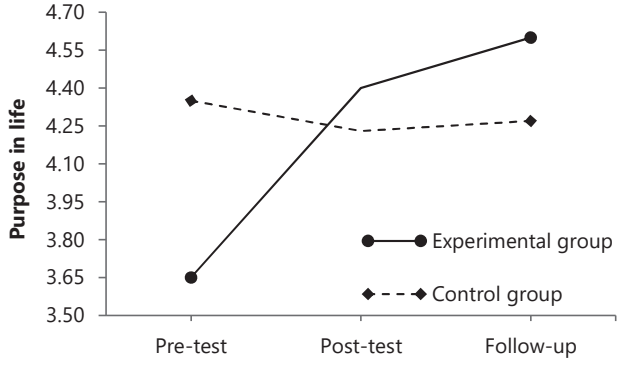

Figure 6.6. *Mean scores on purpose in life for groups across time*

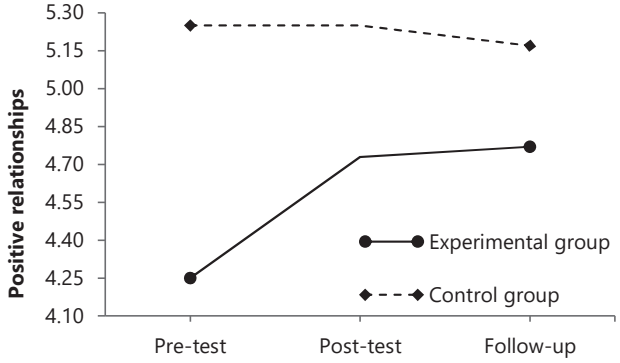

Figure 6.7. *Mean scores positive relationships for groups across time*

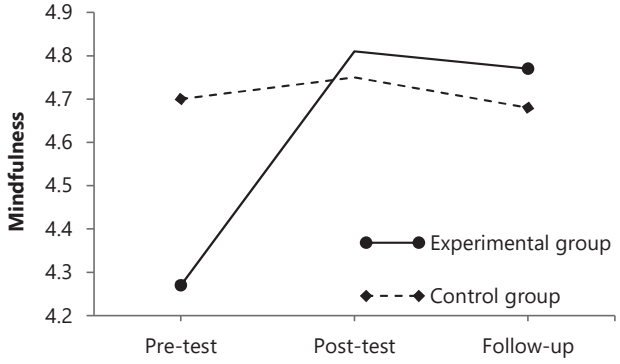

Figure 6.8. *Mean scores on mindfulness for groups across time*

6.3.3. Immediate and long-term effects on positive adaptation

It was hypothesized that participating in the programme compared to not participating would enhance positive adaptation immediately after the programme ended (hypothesis 2a) and at the three-month follow-up (hypothesis 2b). RM-ANOVA's demonstrated that significant time x group interaction effects were found on both recovery and employability (see Table 6.4). To investigate whether these interaction effects concerned immediate and/or long-term effects, simple comparisons were conducted comparing post-test versus pre-test measurement and follow-up versus pre-test measurement, respectively. As can been seen from Table 6.5, we found significant immediate and long-term effects on employability, and a significant immediate effect on recovery. Figure 6.9 and 6.10 visualize these results and show that the average scores in the experimental group increased, which is in the expected direction. As can be seen from Figure 6.10, the follow-up score of the

experimental group on recovery may not have reached statistical significance because the follow-up score of the control group on recovery increased. Based on these results, it is likely to assume that the programme contributed to an increase in recovery and employability immediately after the programme ended and that the effect on employability was sustained three months after the programme ended. Hence, hypothesis 2a is confirmed and hypothesis 2b is partially confirmed.

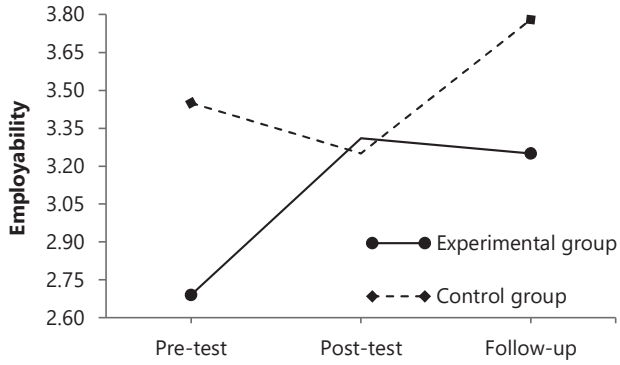

Figure 6.9. *Mean scores on employability for groups across time*

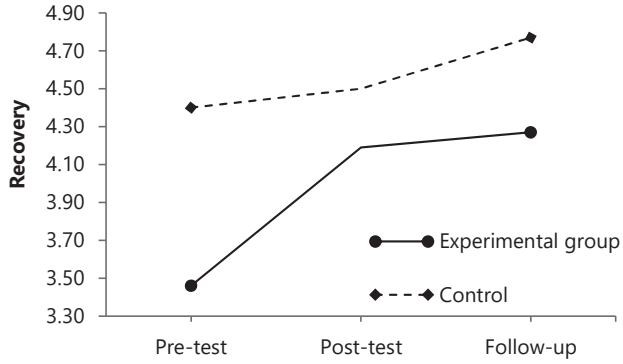

Figure 6.10. *Mean scores on recovery for groups across time*

6.3.4. Coaching relationship

It was hypothesized that relationship strength would be positively related to (immediate changes in) the resilience resources and to (immediate changes in) positive adaptation (hypothesis 3). To test this hypothesis, we conducted nine hierarchical regression analyses. In step 1, we entered a specific resilience resource or indicator of positive adaptation at

pre-test measurement as the first predictor, which indicates the effect of the programme on the identical dependent variable at post-test measurement. In step 2, we added the coaching relationship as a predictor, to test whether this variable would contribute significantly to the effect of the programme. Table 6.6 shows that the coaching relationship strength did not contribute to the effect on either resilience resources or positive adaptation. Hence, hypothesis 3 is rejected.

6.4. DISCUSSION

The aim of the current study was to replicate and revise the findings of a previous study regarding the effectiveness of the psychological resilience-building programme 'ResilienceWise' (IJntema et al., 2020). Despite low statistical power, due to the very small sample size, we were able to replicate most findings. Similar to the previous study, we found significant positive immediate and three-month follow-up effects on hope, self-efficacy, purpose in life and satisfaction with life (positive affect in the initial study), an immediate effect on recovery from stress and no effect on mindfulness. The results of the current study differed from the initial study in the following ways: we found a significant positive immediate and follow-up effect on optimism, no immediate or follow-up effect on positive relationships, no long-term effect on recovery from stress and no relationship between the strength of the coaching relationship and the study outcomes. As in the initial study, we found the strongest effects on hope and self-efficacy, but the current study differed in finding the strongest effect for optimism as well which was purpose in life in the initial study. In the current study, we measured employability rather than task performance and found that the programme enhanced employability immediately after the programme ended and at the three-month follow-up.

An explanation for the significant effect on optimism is that we measured this construct differently: in the current study, we measured it in general, while in the initial study (IJntema et al., 2020), we measured it for the work context. An explanation for not finding significant effects on positive relationships, long-term recovery and the strength of the coaching relationship is that we were unable to split the experimental group into a complete- and incomplete-programme group due to the small sample size. We did make this distinction in the initial study and found that the ResilienceWise programme was only effective for the complete-programme group (IJntema et al., 2020). This implies that the ResilienceWise programme cannot do without its online component and programme participants need to commit to in between session homework to make it worthwhile.

Table 6.6. *Hierarchical regression analysis summary for coaching relationship predicting the effect of the programme on seven resilience resources and two indicators of positive adaptation at T1*

Step 1 Predictor Variable	**B**	**SE B**	**β**	**R^2**	**Step 2 Predictor Variables**	**B**	**SE B**	**β**	**R^2**	**ΔR^2**
Hope T0	0.70	0.30	.69	.48	Hope T0	0.80	0.27	.80*	.67	.18
					Coaching relationship T1	0.51	0.31	.44		
Optimism T0	0.77	0.16	.90**	.80**	Optimism T0	0.77	0.17	.90**	.80*	.00
					Coaching relationship T1	-0.00	0.30	-.00		
Self-efficacy T0	0.14	0.42	.38	.14	Self-efficacy T0	0.41	0.45	.37	.16	.02
					Coaching relationship T1	0.17	0.50	.14		
Satisfaction with life T0	0.72	0.14	.91**	.83**	Satisfaction with life T0	0.78	0.14	.99**	.87**	.04
					Coaching relationship T1	0.38	0.31	.22		
Purpose in life T0	0.59	0.43	.49	.24	Purpose in life T0	1.43	0.54	1.19*	.59	.34
					Coaching relationship T1	1.77	0.87	.91		
Mindfulness T0	0.81	0.32	.72*	.52*	Mindfulness T0	1.33	0.56	1.19	.62	.10
					Coaching relationship T1	0.94	0.83	.56		
Positive relationships T0	0.62	0.25	.72*	.51*	Positive relationships T0	0.68	0.28	.79	.54	.03
					Coaching relationship T1	0.38	0.65	.19		
Recovery T0	0.71	0.23	.79*	.62*	Recovery T0	0.71	0.25	.78*	.64	.02
					Coaching relationship T1	-0.26	0.52	-.13		
Employability T0	0.50	0.20	.72*	.51*	Employability T0	0.51	0.22	.73	.52	.00
					Coaching relationship T1	-0.05	0.33	-.05		

* p < .05; ** p < .01

One key factor that predicted whether programme participants would complete the online component of the programme was the strength of the relationship between the coach and the client: the stronger the relationship, the higher the compliance with the Psyfit programme. Since we did not split groups in the current study, we were unable to replicate these findings. Not splitting the group could also explain why we did not find a relationship between the strength of the coaching relationship and the programme outcomes. The initial study found that relationship strength was related to most study outcomes of the complete-programme group, but not as much in the incomplete-programme group. Apart from relationship strength, the overall results of this study confirm the main findings of the initial study and point in the direction that the ResilienceWise programme is an effective resilience-building programme during organizational change.

6.4.1. Limitations

The most important limitation of this study is the small sample size. This turned out to be smaller than expected, due the loss of the ambassador of the programme in the company. As a consequence, our data collection ended prematurely. This has affected the statistical power of the current study which is low. Despite low power, we found significant programme effects. This is remarkable because in an underpowered study it is less likely to detect programme effects (Christley, 2010). However, this does not imply that any detected programme effect in an underpowered study is necessarily valid. A reason why the detected effects in the current study may still be valid, is that they do not stand on their own: it is a replication study and the results confirm the findings of the initial study (IJntema et al., 2020).

Another limitation is that we were unable to conduct a randomized controlled trial which is considered the most optimal design (Robertson, Cooper, Sarkar, & Curran, 2015). Because of the spill-over effect of an open exchange of information between employees within the targeted department, randomization (or a waitlist control group) was not possible. To ensure a comparison group, employees from a different department who were facing similar challenging circumstances as the experimental group, were chosen as a control group. However, this group was not an ideal comparison group which is not uncommon in quasi-experimental field studies (Nielsen, Taris, & Cox, 2010). The control group differed systematically from the experimental group in gender and in the baseline levels of most of the outcome variables in this study (hope, optimism, self-efficacy, satisfaction with life, positive relationships, recovery and employability). These results indicate a selection effect: the control group of all women had more access to their resources and was better adapted at baseline than the experimental group of mostly men and thus the experimental group needed the programme more than the control group.

Similar to the initial study (IJntema et al., 2020), a limitation of the current study is that we measured positive adaptation by using self-report measures. Positive adaptation, as the manifestation of psychological resilience, is preferably measured using other ratings or behavioural measures, such as personnel data (Britt, Shen, Sinclair, Grossman, & Klieger, 2016). We did not include these measures for both logistical and ethical reasons (see § 5.4.1 for an explanation). In addition, we did not control for stressor load which is nowadays advised in studies regarding the effectiveness of resilience-building programmes (Chmitorz et al., 2018). Therefore we do not know to what extent the organizational change impacted programme participants differently and how this has affected our study results.

6.4.2. Recommendations

Support from supervisors and managers is considered an essential factor in studies investigating the effectiveness of occupational health programmes (Nielsen et al., 2010). Our study confirms the important role managers play in conducting effectiveness studies in organizations. Our study depended on the support of one specific manager in the company. The departure of this ambassador of the programme left us without support regarding the implementation of our resilience-building programme which impacted the power of our study. Therefore, in future studies, we recommend organizing support from more than one manager to ensure the continuity of research as planned.

Adherence to the complete ResilienceWise programme was a condition to investigate the effectiveness of our resilience-building programme. Our study shows that attending the face-to-face coaching sessions did not necessarily result in the completion of the online in-between session homework (two Psyfit modules). In the current study, 50% of the participants adhered to the online programme. In the initial study, this was 57%. This lack of adherence is common in online training programmes in general (Bolier et al., 2013) and is also observed in an online *resilience* training programme (Abbott, Klein, Hamilton, & Rosenthal, 2009). It raises the question as to why people adhere to online training programmes. The initial study found that the strength of the coaching relationship between the coach and the client predicted whether participants would complete the online training in between coaching sessions. Even though we were not able to replicate these findings in the current study, it is important for future (resilience) coaching effectiveness studies to include factors that may explain adherence to in between (online) session work. Relationship strength is a factor worth considering.

A strength of the current study is that we not only studied the effectiveness of our resilience-building programme, but also included the strength of the coach-client relationship as a mechanism that could explain programme effectiveness. In the literature, it is now recommended to move beyond the question of 'what works' to the question of

'what works for whom in which circumstances' (Nielsen & Miraglia, 2017). To answer this last question, it is not enough to conduct (controlled) experimental research. Context and mechanisms should be included when investigating the effectiveness of a programme. Our study made a contribution by including relationship strength as an explanatory mechanism and organizational change as a context factor. However, as mentioned before, we did not measure to what extent the organizational change affected programme participants differently. Future studies regarding the effectiveness of resilience-building programmes should include both mechanisms and context factors as these play an important role in the dynamic process of psychological resilience. By doing so, research is moving from the classic (controlled) experimental approach to a more realistic evaluation of programme effectiveness. This new approach is an area worth exploring in resilience-building programme effectiveness studies (for more information, see Nielsen & Miraglia, 2017).

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Chapter 7

General discussion

'Don't wish it was easier, wish you were better.
Don't wish for less problems, wish for more skills.
Don't wish for less challenge, wish for more wisdom."[13]

[13] Jim Rohn

7.1. INTRODUCTION

The first aim of this thesis was to gain a comprehensive understanding of psychological resilience as a dynamic process by explaining how people at work adapt differently to job-related stressors. To that purpose, we described that which is currently known regarding the definition, measurement and enhancement of psychological resilience from a process-based perspective (Research Question 1; see Table 7.1 for an overview of the research questions) and explained how employees arrive at different outcomes after being exposed to a job-related stressor (Research Question 2). The second aim of this thesis was to gain a comprehensive understanding of how to effectively enhance the dynamic process of psychological resilience in an occupational context. To this purpose, we investigated what a process-based psychological resilience-building programme entails (Research Question 3), how effective such programmes, in particular the ResilienceWise programme, have been in the work context (Research Question 4), and which ingredients made these programmes effective (Research Question 5). In this final chapter, we answer these five research questions, reflect on the meaning of our findings, discuss the strengths and limitations of our research as well as the implications of our findings for future research and practice.

Table 7.1. *Research Questions*

1.	What is known about psychological resilience as a dynamic process: how is it defined, measured and enhanced?
2.	How do people arrive at different outcomes after being exposed to a job-related stressor?
3.	Which criteria must a programme meet to be regarded as a work-related process-based psychological resilience-building programme?
4.	Are current programmes that meet these criteria (see Research Question 3), including the ResilienceWise programme, effective in enhancing psychological resilience, both in the short-term as well as in the long-term?
5.	Which ingredients make these resilience-building programmes effective?

7.2. PSYCHOLOGICAL RESILIENCE AS A DYNAMIC PROCESS

Question 1. What is known about psychological resilience as a dynamic process: how is it defined, measured and enhanced?

Based on literature reviews regarding the definition and conceptualization of psychological resilience (Bryan, O'Shea, & MacIntyre, 2019; Fisher, Ragsdale, & Fisher, 2018; Fletcher & Sarkar, 2013; Infurna & Luthar, 2018; Kossek & Perrigino, 2016; Van Breda, 2018; Windle, 2011), chapter 2 argued that scientists consider psychological resilience in

the work context as a dynamic process that unfolds over time in the context of specific person-environment interactions. Besides it being a dynamic process, it became apparent that definitions of psychological resilience also need to incorporate two critical conditions: 1) exposure to a stressor, as the antecedent that triggers the process of psychological resilience, and 2) the outcome of positive adaptation, as the visible manifestation of the process of resilience. The implications of these two conditions are twofold: first, conceptualizing resilience as a trait, an outcome variable or a resource is outdated and, secondly, the definition of psychological resilience, simply put, is the dynamic process by which people successfully adapt to stressors.

To understand the process of psychological resilience, several models have been developed pertinent to the work context (Britt, Shen, Sinclair, Grossman, & Klieger, 2016; Cooper, Flint-Tayler, & Pearn, 2013; Fisher et al., 2018; Kossek & Perrigino, 2016; McLarnon & Rothstein, 2013). By comparing these models, we extracted five elements that are crucial to any process model of psychological resilience:

1) *pre-stressor adjustment* is the necessary reference point for interpreting the outcomes of the process of resilience;
2) a *stressor* is the necessary condition to trigger the process of resilience;
3) *resilience mechanisms* are the core process (mediating variables) of resilience;
4) personal and environmental *resilience resources* are the conditions that influence the relationships among the stressor, resilience mechanisms and resilience outcomes (moderating variables); and
5) *resilience outcomes* are the visible manifestation of the process of resilience.

Together, these five core elements constitute a basic framework of the dynamic process of psychological resilience.

When it comes to measuring psychological resilience, our literature review revealed a mere two (of 24) scales that operationalized resilience as a dynamic process: the *Multidimensional Trauma Recovery and Resiliency* instrument (MTRR135; 135 items; Harvey et al., 2003), which also has a short form (MTRR99; 99 items; Liang, Tummala-Narra, Bradley, & Harvey, 2007), and the *Workplace Resilience Inventory* (WRI; 60 items; McLarnon & Rothstein, 2013). The former is more general in nature, whereas the latter is specifically designed for the work context. The obvious limitation of the MTRR for our purposes is that it may not be applicable to the work context because it is designed for those dealing with a history of (extensive) abuse. The limitation of the WRI here is that it only measures two elements in the resilience process: resilience mechanisms and resilience resources. It does not measure pre-stressor adjustment, (characteristics of) the stressor and resilience outcomes. All other measures that we found in existing literature reviews regarding the measurement of psychological resilience (Cosco et al., 2017; Pangallo, Zibarras, Lewis, & Flaxman, 2015; Smith-Osborne & Bolton, 2013; Windle, Bennett, & Noyes, 2011) were

based on the outdated concept of resilience as a trait, a resource or an outcome. We argue therefore, that comprehensive instruments measuring *all* the elements in the process of psychological resilience are not readily available.

When it comes to enhancing psychological resilience, we found only one programme that defined, conceptualized and measured it as a dynamic process: the *Promoting Adult Resilience* programme (PAR; Foster et al., 2018). The general aim of this programme was to enhance resilience and wellbeing among registered mental health nurses facing job-related stressors, such as violence and work overload. Its specific aim was to enhance the personal resources of self-efficacy, reflective ability and compassion in two day-long workshops using a mixed approach (strength-focused, cognitive-behavioural and interpersonal). Unfortunately, the PAR programme lacked consistency: the specific aim of the programme was neither in line with the approach (mixed) nor with the measuring scale used (WRI; McLarnon & Rothstein, 2013). Therefore, this programme cannot be considered as a best practice example of process-based resilience-building programmes. Inconsistencies, such as in the PAR programme, are typically found in resilience-building programmes (Robertson, Cooper, Sarkar, & Curran, 2015). In order to overcome this problem, we developed a checklist to facilitate the design of coherent resilience-building programmes (see Table 7.2).

In sum, the answer to research question 1 is: scientists now agree on a conceptual level that, in a work context, psychological resilience should be regarded as a dynamic process. In essence, it should be defined as the process by which people successfully adapt to a stressor. This process consists of five basic elements: pre-stressor adjustment, a stressor, resilience mechanisms, resilience resources and resilience outcomes. However, at this stage, little is known about how to measure these elements and how to enhance the resilience process in the work context.

Question 2. How do people adapt differently to a stressor?

To gain a better understanding of how the process of psychological resilience works and more specifically of how people adapt differently to stressors, we developed a new model of psychological resilience, the Psychological Immunity-Psychological Elasticity (PI-PE) model (see Figure 7.1). We derived the PI-PE model from the existing literature regarding the crucial elements in resilience process models (Bonanno, Romeiro, & Klein, 2015; Fisher et al., 2018; IJntema, Burger, & Schaufeli, 2019) and the literature regarding (mal)adaptive outcomes following stressful events or circumstances (e.g. Ayed, Toner, & Priebe, 2019; Carver, 1998; Zautra, Arewasikporn, & Davis, 2010). A model such as this is needed because existing process models do not explain sufficiently how people arrive at different outcomes after being exposed to the same stressor.

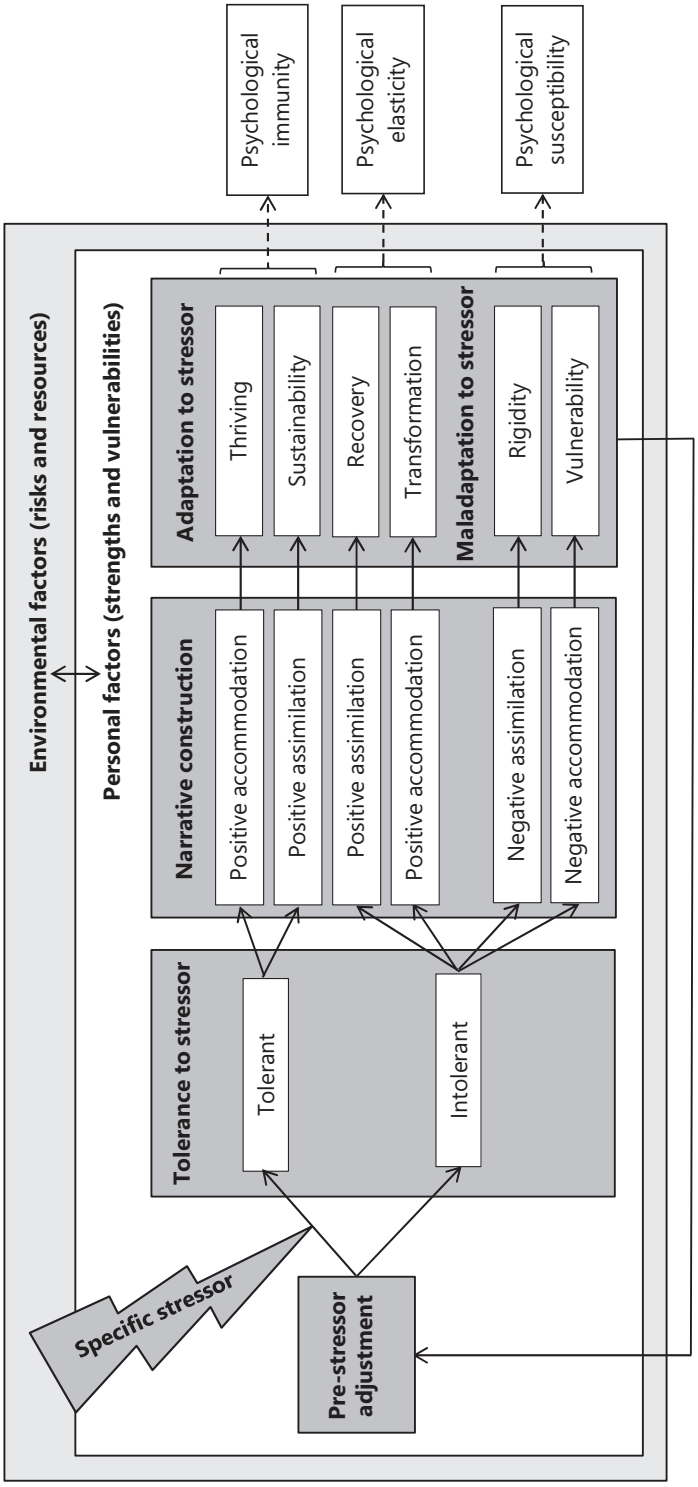

Figure 7.1. *The Psychological Immunity–Psychological Elasticity (PI-PE) model of psychological resilience*

Basically, four types of outcomes can be observed:

1. enhanced psychological functioning (thriving);
2. maintained psychological functioning (sustainability);
3. restored psychological functioning (recovery);
4. altered psychological functioning (transformation).

The PI-PE model defines psychological resilience as a dynamic process which is triggered by a specific stressful event/circumstance and is aimed at enhancing, maintaining, restoring or altering psychological functioning. As can be seen from Figure 7.1, the PI-PE model uses the aforementioned five basic elements of the resilience process – pre-stressor adjustment, a stressor, resilience mechanisms, resilience resources and resilience outcomes – to explain how people arrive at different outcomes after being exposed to a specific stressor. Four of these elements – pre-stressor adjustment, a stressor, resilience resources and resilience outcomes – are regarded as conditions of the resilience process. In addition, two resilience mechanisms are distinguished in the PI-PE model: tolerance and narrative construction. Tolerance refers to the extent to which a person refrains from responding defensively to a specific stressor. Narrative construction refers to the extent to which a person is able to make sense of their experience and come to terms with it. Taken together, these mechanisms and conditions explain how people arrive at different outcomes after being exposed to a stressor.

Characteristic of the PI-PE model are the two pathways of psychological resilience: the pathway of psychological immunity and the pathway of psychological elasticity. The core mechanism in the immunity pathway, that distinguishes between resilience and non-resilience, is tolerance. Those who follow this path demonstrate that their pre-stressor adjustment is robust enough to tolerate a specific stressor. This pathway results in the outcome of either thriving or sustainability. The core mechanism in the elasticity pathway, that distinguishes between resilience and non-resilience, is narrative construction. Those who follow this path demonstrate that they are able to bounce back and adapt to a specific stressor, even though their functioning was initially affected by that stressor (intolerant). This pathway results in the outcome of either recovery or transformation. The PI-PE model also includes the maladaptive pathway of psychological susceptibility. Those following this path have been affected by a specific stressor (intolerant), but are not able to construct a personal narrative that enable them to adapt to that stressor. This pathway results in the outcome of either rigidity or vulnerability, referring to restricted and deteriorated psychological functioning, respectively. Whatever the outcome of the process of psychological resilience, the outcome will affect a person's pre-stressor adjustment for a similar stressor in the future: it may either help a person to learn to tolerate a similar stressor in the future (upward spiral) or it may cause a person to become more vulnerable

to that stressor (downward spiral). As we constantly face new and recurring stressors, the process of psychological resilience is a continuous process.

Whether someone follows the path of psychological immunity, elasticity or susceptibility is not a matter of mere choice, rather it depends on:

1. the person's pre-stressor adjustment;
2. the nature, duration and intensity of the stressor;
3. the person's tolerance to that stressor;
4. the extent to which the person is able to integrate the experience with the stressor into an existing narrative (assimilation) or into a new or altered narrative (accommodation);
5. the availability and use of personal and environmental resources to deal with the stressor.

In sum, the answer to research question 2 is: people adapt differently to a stressor because they differ with respect to the temporally related elements in the dynamic process of psychological resilience as depicted in the PI-PE model.

7.3. PROCESS-BASED PSYCHOLOGICAL RESILIENCE-BUILDING PROGRAMMES

Question 3. What is a process-based psychological resilience-building programme?

Since the resilience literature provides little information as to what constitutes a resilience-building programme (see Chapter 2), we took it upon ourselves to formulate the principles of such a programme. Based on literature reviews regarding the definition, measurement and enhancement of psychological resilience, we developed a checklist containing twelve criteria for process-based resilience-building programmes that can be used in the work context. These criteria can be found in Table 7.2. To ensure content validity, an overall criterion is intra-programme consistency. That is, the way resilience is defined, depicted and measured needs to be consistent with both the programme target and approach. This checklist does not prescribe a standard format for resilience-building programmes, such as the Mindfulness-Based Stress Reduction programme has (MBSR; Kabat-Zinn, 1990). However, it is intended to ensure the quality and consistency of a process-based psychological resilience-building programme as it summarizes the relevant topics that need to be addressed. It can be used to scrutinize or evaluate programmes (e.g. identifying missing information and inconsistencies), to optimize programmes (e.g. ensuring all relevant 'resilience' information is provided) and to compare programmes (e.g. in a systematic review).

Table 7.2. *Checklist containing twelve criteria for psychological resilience-building programmes applied to the ResilienceWise programme (see Chapter 5)*

1.	The topic of interest is **psychological resilience.**	The ResilienceWise programme is focused on psychological resilience.
2.	The working **population** for whom the programme is intended is specified.	Office workers arranging care for or providing care budgets to clients.
3.	The work **context** in which the programme is provided is specified.	Health care office department of a large Dutch insurance company.
4.	Resilience is **defined**, incorporating the terms *dynamic process*, *stressor* and *positive adaptation*.	Resilience is defined as the dynamic process of adapting well in the face of a stressor.
5.	The (characteristics of the) **stressor** that triggers the need for resilience is (are) specified.	Organizational change due to changing governmental policies and a merger, more specifically office workers were facing changes in their work environment and working conditions, e.g. team composition change, new team leaders and senior managers, shifting tasks, downsizing, transfers to other departments.
6.	An explanation is provided for how **positive adaptation** is understood.	Positive adaptation was operationalized as task performance, recovery and general health, see Table 5.1 in Chapter 5.
7.	The **process** by which people adapt to a stressor is depicted and explained.	See Figure 5.1 in Chapter 5.
8.	The **timing** of the programme is explained in relation to the stressor.	The programme took place *during* stressor exposure.
9.	A general and specific programme **aim** are provided. The general aim is to enhance resilience. The specific aim concerns which (malleable) element(s) in the resilience process is (are) targeted.	The general aim was to enhance psychological resilience. The specific aim was to enhance eight resilience resources (see Table 5.1 in Chapter 5).
10.	An explanation is provided for how resilience is **measured**: a. **which element(s)** in the process of resilience is (are) measured. b. at which **time points** (so that change in resilience can be observed).	Both the eight resilience resources and three indicators of positive adaptation were measured before the programme, immediately after the programme and at three-month follow-up by scales described in § 5.2.4.1. and § 5.2.4.2, respectively.
11.	It is specified whether there is a baseline level (of a specific element of resilience) at which people are **eligible** for the programme.	No baseline level was required. The programme targeted all members in a specific department.
12.	An explanation is provided for how the programme **enhances** resilience: a. by which **approach**, b. which **mode of delivery**, and c. in which time period (**duration)**	Resilience was enhanced by a resource-based approach (see Table 7.3), using an individual model of delivery (personal coaching) over a period of thirteen weeks

A viable programme must meet the twelve checklist criteria to be called a 'process-based psychological resilience-building programme'. Hence, the checklist brings clarity to the field of resilience-building programmes. It allows us to more critically assess which programmes should be regarded as resilience building and which should not. Programmes that do not meet the criteria should no longer be promoted as resilience-building programmes, but should appear under different names, such as resource-building or wellbeing programmes.

A process-based perspective on psychological resilience assumes that there are at least two types of approaches to resilience-building programmes, depending on the timing of the programme in relation to the timing of the stressor (see Table 7.3 for an overview of approaches): proactive programmes planned *before* stressor exposure and reactive programmes planned *during* or *after* stressor exposure (Chmitorz et al., 2018). The PI-PE model clarifies which mechanism each type of programme targets; proactive programmes are aimed at enhancing tolerance to an expected stressor (*tolerance-enhancement approach*), whereas reactive programmes are aimed at supporting people to construct narratives that enable them to adapt to the stressor (*narrative approach*). Both approaches are considered to be most effective in the context of a specific stressor which is a pre-condition in the PI-PE model. In addition, the tolerance-enhancement approach is considered to be most effective in the context of a recurring stressor where people need to learn to adapt to this stressor over the longer term. Typically, in the work context people are confronted with recurring stressors. Hence, the tolerance-enhancement approach is particularly suitable for the work context.

Another approach that can be derived from the PI-PE model is the *measured approach* which aims to reduce the intensity and duration of the stressor before or during exposure (see Table 7.3). However, since the presence of a stressor is a necessary condition for resilience, eliminating the stressor is not a resilience-building approach. The PI-PE model stipulates two other types of approaches: a *personal resource-based* and an *environmental resource-based approach*, aimed at enhancing personal factors (e.g. self-efficacy) and environmental factors (e.g. social support), respectively (see Table 7.3). These latter two approaches are more generally applicable than the aforementioned approaches and can equally be applied in the case of chronic, multiple or unexpected stressors. In the work context, where people are often exposed to multiple (job-related) stressors, these resilience-building approaches are quite common (see Vanhove, Herian, Perez, Harms, & Lester, 2016).

In sum, the answer to research question 3 is: a process-based psychological resilience-building programme is a programme that meets the twelve checklist criteria of Table 7.2 and includes one of the five classified approaches outlined in Table 7.3. As such,

the checklist and classification provide more clarity as to what a process-based psychological resilience-building programme should entail.

Table 7.3. *Classification of approaches to psychological resilience-building programmes*

1.	Tolerance-enhancement approach	Proactive programme planned before stressor exposure; aimed at enhancing tolerance to an expected stressor over the longer term.
2.	Narrative approach	Reactive programme planned during or after stressor exposure; aimed at supporting people to construct narratives that enable them to adapt to the stressor they are exposed to.
3.	Measured approach	Programme aimed at reducing the duration and/or intensity of a specific stressor (but not aimed at eliminating the stressor!).
4.	Personal resource-based approach	Programme aimed at enhancing personal factors, such as self-efficacy and optimism. This approach is more generally applicable, also under circumstances of chronic, multiple or unexpected stressors.
5.	Environmental resource-based approach	Programme aimed at enhancing environmental factors, such as social support. This approach is more generally applicable, also under circumstances of chronic, multiple or unexpected stressors.

Question 4. How effective are current process-based psychological resilience-building programmes in the work context in general, including the *ResilienceWise* programme in particular?

In order to evaluate the effectiveness of psychological resilience-building programmes in the work context, we conducted a systematic literature review. This review was not restricted to dynamic process-based programmes as we also included non-process-based programmes. Of all programmes identified, only one could be regarded as a process-based resilience-building programme: the *Promoting Adult Resilience* programme (PAR; Foster et al., 2018). This single group study of 24 mental health nurses did not convincingly demonstrate the effectiveness of the programme. A significant positive effect was only found on one of eight subscales of the Workplace Resilience Inventory (WRI; McLarnon & Rothstein, 2013), namely behavioural self-regulation. Moreover, this effect was only observed immediately after the programme ended and had disappeared three months later. As mentioned in response to our first research question, a limitation of this study was that this study lacked content validity because the specific aim of the programme was not consistent with the programme approach and the measuring scale used. Hence, we know little about the effectiveness of process-based psychological resilience-building programmes in the work context.

To answer our fourth research question, we also investigated the effectiveness of the psychological resilience-building programme 'ResilienceWise' that we developed in collaboration with a Dutch consultancy firm. To the best of our knowledge, this programme is the first to meet the twelve criteria for process-based resilience-building programmes (see Table 7.2 for an explanation). The aim of this resource-based programme was to enhance resilience resources in health care office workers of an insurance company going through a process of organizational change. We investigated the effectiveness of this programme in terms of enhancing resilience resources and fostering positive adaptation using two independent quasi-experimental field studies with a 2 (experimental group, no-programme control group) x 3 (pre-test, post-test, three-month follow-up) design.

Regarding resilience resources, the initial study (see Chapter 5) showed that the programme enhanced hope, self-efficacy, environmental mastery, purpose in life, positive affect and positive relationships in office workers immediately after the programme ended and this effect was sustained for three months. No effects were observed on mindfulness and optimism. The strongest effects were found on goal-related resilience resources (i.e. hope, purpose in life and self-efficacy) which may be because of the goal-related nature of the coaching programme and/or the importance of goal-related resources during organizational change. In the replication study (see Chapter 6), the positive immediate and three-month follow-up effects on hope, self-efficacy, purpose in life and positive affect (measured with a different scale than the scale in the initial study) were corroborated which strengthens the validity of the previous findings. In addition, we found significant positive immediate and follow-up effects on optimism which was not significant in the initial study. We found no effect on positive relationships and mindfulness and could not report any results for environmental mastery as the scale was not reliable. Taken together, these findings largely confirm the results of the initial study.

Regarding positive adaptation, the initial study found that office workers who followed the programme enhanced their recovery from stress and general health. These effects were sustained three months after the programme ended. In addition, the programme protected the office workers from a decline in task performance. In the replication study, we measured employability (rather than task performance) and recovery. We found that the programme enhanced employability and recovery immediately after the programme ended and that the effect on employability was sustained three months after the programme ended. Despite the small sample (n = 8 in the experimental group), which negatively affected the statistical power, the results of the replication study confirm the main findings of the initial study.

In sum, the answer to research question 4 is: our systematic review revealed that the current knowledge regarding the effectiveness of psychological resilience-building

programmes in the work context seems to be mainly based on an outdated understanding of psychological resilience. We know little about the effectiveness of programmes that understand resilience as a dynamic process. To contribute to the evidence base of research regarding the effectiveness of process-based resilience-building programmes, we developed a programme that meets the twelve criteria for process-based programmes (see Table 7.2). Our research demonstrated that this ResilienceWise programme was effective in enhancing goal-related resources in office workers and that it also enabled them to better adapt to organizational change. These findings suggest that it makes sense to develop resilience-building programmes according to our twelve criteria.

Question 5. Which ingredients make process-based psychological resilience-building programmes in the work context effective?

Our systematic review regarding the effectiveness of resilience-building programmes (see Chapter 4) was also intended to answer the question as to which ingredients make process-based resilience-building programmes effective. However, since we found only one process-based programme (Foster et al., 2018), we cannot answer this question based on the current literature. Even though we were unable to look into factors influencing the effectiveness of process-based programmes, we uncovered factors that may have positively influenced the effectiveness of non-process-based resilience-building programmes during stressor exposure (see Chapter 4). These programmes are characterized by:

- a focus on a specific stressor;
- a single programme approach;
- an individual mode of delivery;
- a duration of more than fourteen hours.

Our research regarding the effectiveness of the ResilienceWise programme showed that three of the four factors may also contribute to the effectiveness of process-based programmes. The ResilienceWise programme was focused on a specific stressor (organizational change), used a single programme approach (personal resource-based) and used an individual mode of delivery. However, the programme did not last more than fourteen hours. In contrast, the PAR-programme (Foster et al., 2018) was not focused on a specific stressor, used a mixed approach and was group-based (see Chapter 4). It can be speculated that this might have contributed to the fact that the PAR programme was not as effective as the ResilienceWise programme.

In addition, our research indicated that two other factors play a role in explaining the effectiveness of resilience-building programmes. The first factor concerns programmes that meet the criteria for resilience-building programmes (see Table 7.2), as the ResilienceWise programme does. The second factor is the strength of the relationship

between the coach and the client which, of course, only applies to programmes using an individual (coaching) mode of delivery. In our initial study, relationship strength was positively related to (changes in) the resilience resources of hope, optimism, self-efficacy, environmental mastery, purpose in life, positive affect, task performance, recovery and general health. However, it was not related to (changes in) mindfulness and positive relationships. Relationship strength also predicted whether participants would complete the online modules in the programme. Unfortunately, we were unable to replicate this finding in the replication study, because of the small number of participants (n = 4) that completed the whole ResilienceWise programme. Therefore, we base our conclusion only on the initial study: relationship strength is not only a consistent factor explaining the effectiveness of coaching programmes (De Haan, Grant, Burger, & Eriksson, 2016; Graßmann, Schölmerich, & Schermuly, 2020), but also – at least partly – a factor explaining the effectiveness of *resilience-building* coaching programmes.

In sum, the answer to research question 5 is: factors that may contribute to the effectiveness of process-based psychological resilience-building are programmes that meet the criteria for resilience-building programmes (see Table 7.2); focus on a specific stressor; use a single programme approach; and use an individual mode of delivery. When it comes to resilience coaching programmes, the strength of the coaching relationship is a factor worth exploring.

7.4. LIMITATIONS

The first limitation is that this thesis is restricted to *psychological* resilience viewed from a process-based perspective. This implies that the results – for example, the checklist for resilience-building programmes and the PI-PE model (see Chapter 2 and 3) – apply to psychological resilience conceptualized as a dynamic process. These results do not necessarily apply to other types of resilience that are being studied, for example, technological, biological, individual, family, community, team, organizational, national, humanitarian, disaster and ecological resilience (Earvolino-Ramirez, 2007; Kimhi, 2016; Martin-Breen & Anderies, 2011; McAslan, 2010). These results also do not apply to non-process-based conceptualizations of resilience, such as a trait, a resource or an outcome.

The second limitation is that this thesis is restricted to the work context. Although the checklist for resilience-building programmes and the PI-PE model have been developed for use in this particular context, they can also be used to advance research in other contexts, for example, in health care (e.g. patients) and in education (e.g. students). For use in these other contexts, only the terms *working* and *work* need to be removed from criteria 2 and 3 in Table 7.2, respectively.

The third limitation concerns the PI-PE model (see Figure 7.1). This model is not a 'ready-to-empirically-test' model. Rather, it should be understood as a comprehensive conceptual framework for understanding 1) how the process of psychological resilience works differently for different people and 2) how to support individuals in their adaptation process. As such, it is illuminating for both research and practice. The strength of the model therefore lies in that it synthesizes the elements that are considered 'standard' elements in a dynamic process model of psychological resilience: pre-stressor adjustment, a stressor, resilience mechanisms, resilience resources and resilience outcomes (see Chapter 2). In addition, the model includes the outcomes that have been related to resilience before: thriving, sustainability, recovery and transformation (Carver, 1998; Tedeschi & Calhoun, 2004; Zautra et al., 2010).

The fourth limitation concerns our literature review regarding the effectiveness of resilience-building programmes (see Chapter 4). We excluded studies that did not report a definition of psychological resilience, a resilience measurement scale or a stressor. We applied this restriction to ensure that the included programmes would meet the minimal requirements that may be expected of resilience-building programmes. However, failing to report this particular information, does not necessarily mean that the authors did not have this information. Programme descriptions are often short in research papers and programme manuals are not included. Yet, reporting a definition, measurement scale and stressor and reporting additional information summarized in the checklist for resilience-building programmes (see Table 7.2) is crucial in a field as complex as the field of resilience. Until this becomes standard practice, it will be difficult to compare programmes in a systematic review.

The fifth limitation of this thesis is that we restricted ourselves to studies written in English and published in peer-reviewed scientific journals. Consequently, we may have missed otherwise eligible programmes written in other languages and published outside the scientific domain.

The final limitation, that we discuss here, concerns the two studies regarding the effectiveness of the ResilienceWise programme (see Chapter 5 and 6). These studies were not randomized control trials (RCT). Because programme participants worked in the same department and had an open exchange of information, we did not randomize the experimental and control groups or use waitlist control groups. Without randomization, the experimental and control groups cannot be regarded as equivalent which limits the internal validity of both effectiveness studies. In both studies, the experimental group scored differently on several variables at baseline than the no-programme control group. In the first study, the experimental group included more women, more lower educated employees and more temporary employed employees than the control group. In addition, the experimental group scored lower on the resilience resources of self-efficacy and

mindfulness. In the replication study, the experimental group included mostly men and the control group included only women. In addition, the experimental group scored lower than the control group on hope, optimism, self-efficacy, satisfaction with life, positive relationships, recovery and employability. These results suggest a selection effect: in both studies, the control group had more access to resources and, in the replication study, the control group was also better adapted at baseline than the experimental group. Thus, it can be argued that the experimental group needed the programme more than the control group. These results also mean that the control group was not an ideal comparison group which is not uncommon in quasi-experimental field studies (Nielsen, Taris, & Cox, 2010). Despite this limitation, we were able to use a between-group design in both studies which is regarded as more rigorous than a within-group design (Vanhove et al, 2016); we gathered longitudinal data; and conducted research in a natural setting enhancing the external validity of our study.

7.5. RECOMMENDATIONS FOR FUTURE RESEARCH AND PRACTICE

Anyone interested in the concept of psychological resilience should be aware that the scientific literature regarding psychological resilience in the work context is rather fragmented. Even though the concept may seem straightforward at first glance, an area of debate has been the conceptualization of resilience: *what* allows people to positively adapt to stressors (Fisher et al., 2018). Many people still regard resilience as a personal attribute. This thesis strives to put this prevailing misconception to rest. We explained that the different perspectives on psychological resilience can be seen as a reflection of an evolving field: over time, resilience has transitioned from a trait-based, outcome-based and resource-based perspective to the current view that resilience is a dynamic process by which people adapt to a stressor (see Chapter 2). Characteristic of this process-based perspective is that it views resilience as a broad phenomenon encompassing a number of temporally related elements, rather than an isolated construct (Bonanno et al., 2015). We recommend that both researchers and practitioners take notice of this most recent perspective and regard resilience as a dynamic process by which employees adapt to stressors.

7.5.1. Recommendations for future research

In this thesis, we argue that there is still much to learn about the process of psychological resilience in the work context: how to understand, measure and enhance it. Hence, there is a need for more research in this area. The first task at hand is to investigate the process of resilience itself. This research should take the factor 'time' into account as – by definition

– a process cannot be measured at one time point, rather longitudinally (for a more in-depth discussion on this topic, see Britt et al., 2016; Fisher et al., 2018).

To investigate the process of psychological resilience in the work context, a good starting point is the PI-PE model (see Figure 7.1). Compared to previous resilience process models (e.g. Britt et al., 2016; Cooper et al., 2013; Fisher et al., 2018; Kossek & Perrigino, 2016; McLarnon & Rothstein, 2013), an advantage of the PI-PE model is that it takes into account that people adapt differently to stressors they encounter. Future research into the PI-PE model should focus on the two pathways that constitute the core of this model: psychological immunity and psychological elasticity. To learn more about the pathway of immunity, employees' responses to job-related stressors could be investigated: to what extent does their response differ for a stressor they have not been exposed to before, compared to a stressor they have been exposed to? In addition, when it comes to a stressor they encounter for the first time: to what extent is intolerance their 'default' response and does this apply to different stressors as well? To learn about the pathway of psychological elasticity, differences could be investigated between people who experienced a specific stressor and people who did not: which narrative have they constructed about that stressor and to what extent do these narratives relate to (different) adaptations to that stressor? Answering these research questions would not only provide empirical evidence for the PI-PE model in itself, but also provide new insights into the dynamic process of psychological resilience.

A second line of research concerns the measurement of the process of psychological resilience at work. In this thesis, we showed that there is a large variety of scales with which to measure resilience. This makes it hard to compare results (see Chapter 4). Such lack of standardization is often seen in an emerging field (Macedo et al., 2014). In addition, we found that there are currently no instruments readily available which measure *all* the elements in the process of psychological resilience (see Chapter 2). Only one instrument exists that measures *some* elements (WRI; McLarnon & Rothstein, 2013). Therefore, an important area of research is to develop and test a comprehensive instrument for the work context that could measure all the elements in the resilience process: pre-stressor adjustment, the stressor itself, resilience mechanisms, resilience resources and resilience outcomes. Such an instrument need not be completely new. In part, it could consist of existing scales that are available to measure single elements in the process of resilience, for example, the scales that we used to measure the effectiveness of the ResilienceWise programme (see Chapter 5 and 6). Ideally, a novel 'resilience process' instrument should consist of both subjective and objective measures, certainly when it is based on the PI-PE model. This model distinguishes between the *capacity* for resilience and the *demonstration* of resilience (a distinction emphasized by Britt et al., 2016). Pre-stressor adjustment and narrative construction are regarded as the capacity for resilience

and can be measured using subjective measures (e.g. self-report scales). Tolerance and adaptation are regarded as the demonstration of resilience and should be measured using behavioural or objective measures, such as other ratings and personnel data (Britt et al., 2016). Finally, a new 'resilience process' instrument should allow for flexible use, meaning that subscales can be omitted or added depending on the specific stressor at hand and the timing of the measurement (before, during or after stressor exposure). An advantage of (flexibly) standardizing the measurement of the resilience process is that it will become easier to compare future research results.

The third line of research concerns the enhancement of psychological resilience. As we found only one process-based resilience-building programme in the existing literature (PAR; Foster et al., 2018) and developed another one ourselves (the ResilienceWise programme; see Chapter 5), an important task is to develop and test more resilience-building programmes from a process-based perspective. When developing such a programme, we recommend researchers choose a single programme approach as our review regarding the effectiveness of resilience-building programmes indicated that a single approach may be more effective than a mixed approach (see Chapter 4). A single approach could be either a tolerance-enhancement approach, a narrative approach, a measured approach, a personal resource-based approach or an environmental resource-based approach (see Table 7.3). In addition, we recommend researchers use the checklist for resilience-building programmes (see Table 7.2) when developing a programme. Using this checklist helps to ensure the quality and consistency of process-based programmes when it comes to the resilience content and this, in turn, contributes to the effectiveness of such programmes (Vanhove et al., 2016).

Moreover, when developing a process-based resilience-building programme, we recommend focusing the programme on one specific job-related stressor (see Figure 7.1). The reason for this recommendation is that it is hard to determine successful adaptation to one specific stressor, let alone to multiple stressors. The specific stressor of choice is preferably unavoidable, such as dealing with the death of a patient for palliative care providers (Mehta et al., 2016). In our own research, the unavoidable stressor was organizational change (see Chapter 5 and 6). Under these circumstances, resilience programmes are probably most helpful (Card, 2018). When the stressor is avoidable, such as a hostile or unsafe working environment (Card, 2018), it is not recommended to build resilience, but rather to eliminate the stressor itself. Hence, concentrating a programme on one specific, unavoidable stressor not only makes the programme suited for resilience building, but it will probably also contribute to programme effectiveness.

A fourth line of research concerns realistic study designs. Even though randomized controlled trials (RCT) are still considered the gold standard, there is also a call for a more realistic approach (Nielsen & Miraglia, 2017). This kind of approach moves beyond the

question of 'what works' to the question of 'what works for whom in which circumstances'. To answer these questions, it is not enough to conduct (controlled) experimental research. Context and mechanisms should be included when investigating the effectiveness of a programme. This new approach is an area worth exploring in resilience-building programme effectiveness studies, especially because a stressor is an inevitable context factor in resilience research. Chapter 5 and 6 showed that the kind of stressor (i.e. organizational change) may influence programme outcomes (i.e. enhancement of goal-related resources; see Chapter 5). Therefore, future studies regarding the effectiveness of resilience-building programmes should consider including both mechanisms and context factors. By doing so, research is moving from the classic (controlled) experimental approach to a more realistic evaluation of programme effectiveness.

When it comes to mechanisms, we specifically looked at the strength of the relationship between the coach and the client as a mechanism to explain programme effectiveness. Based on this research described in chapter 5, we recommend taking so-called 'common factors' into account when investigating the effectiveness of resilience-building coaching programmes. In the literature regarding coaching programmes, common factors are defined as non-specific factors that all approaches to coaching share, for example, the strength of the coach-client working relationship and client expectations (De Haan, Duckworth, Birch, & Jones, 2013). In the literature on *resilience* coaching programmes, it is not current practice to include common factors. There is a gap between coaching research (method) and resilience research (content). In our research, we aimed to bridge this gap by including the strength of the working relationship between the coach and the client as a common factor in the ResilienceWise programme (see Chapter 5 and 6). This common factor is regarded as a key factor in explaining coaching effectiveness (De Haan et al., 2016; Graßmann et al., 2020). Our research showed that the strength of the relationship between the coach and the client is a factor worth considering when investigating the effectiveness of resilience coaching programmes. However, relationship strength is not the only common factor identified in the literature. Other common factors worth exploring are, for example, client expectations, the coach's allegiance to their coaching approach and empathic understanding of the coach (De Haan et al., 2013). Merging the coaching literature and resilience literature in this way may provide new insights as to which ingredients make resilience-building coaching programmes effective.

7.5.2. Recommendations for practice

In practice, psychological resilience is often regarded as a 'positive' phenomenon. However, this is misleading. From a process-based perspective, the term 'positive' only refers to the outcome of positive adaptation. This does not necessarily imply that the process towards this outcome should be considered 'positive' as well. Consider, for

example, an entrepreneur whose successful restaurant goes bankrupt due to a governmental decision (e.g. COVID-19 lockdown). In one way or another, she has to deal with that situation. Coping is not equivalent to adaptation. For adaptation to happen, she needs to come to terms with her situation: both the loss of her restaurant as well as being out of work, in debt and in need of a new direction. To call this process 'positive' is rather cynical and does not do justice to the tough task the entrepreneur is facing. This example illustrates that a person in need of resilience is – by definition – facing some kind of (severe and intense) stressor and the process of adapting to this stressor may be long and tough. Therefore, building resilience should never be taken lightly.

Companies that are interested in building the resilience of their workforce are advised to first map the unavoidable and recurring stressors in their organization that particular (groups of) employees face and that cannot be prevented (Card, 2018). Examples of unavoidable stressors are call centre employees facing impolite treatment by customers, teachers facing noncompliant behaviour of students and physicians facing life or death decisions without enough information. To be successful in their jobs, employees need to build resilience to these stressors because they are exposed to them on a regular basis. Therefore, the first priority of companies, when it comes to resilience building, should be to support their employees in building resilience to job-related stressors that are unavoidable and recurring. We also recommend companies map the stressors that are avoidable in their organization, such as an unsafe and hostile environment (Card, 2018). However, building resilience to these stressors is not the right approach. Rather, these stressors should be eliminated from the organization. Companies cannot prepare for all stressors, take, for example, the COVID-19 outbreak which took most companies by surprise. In the case of such rare and unpredictable stressors, the first task at hand is crisis management, rather than resilience building (Hutchins & Wang, 2008). Once the crisis is under control, companies can consider how to (re)build psychological resilience in their workforce.

When a company decides to invest in building resilience, the first task at hand is to identify the stressor that triggers the need for resilience building and for which group of employees. In our presentation of the PI-PE model (see Chapter 3), we argued that resilience cannot be acquired for job-related stressors in general, but only for a specific stressor. Since employees often face many job-related stressors, companies should be aware that psychological resilience cannot be 'fixed' by one programme. Rather, resilience building requires continuous attention and effort as the process of psychological resilience repeats itself for every distinct stressor. As stressors are constantly present in the work context, there is no end to resilience building.

Once the specific stressor for a group of employees has been identified, a programme can be developed for that group to build resilience to that stressor.

Developing a suitable programme for that group will take time and effort as we found no best practice example to draw upon (see Chapter 4). Useful guidelines in this process are the aforementioned checklist for process-based resilience-building programmes (see Table 7.2), our classification of resilience-building approaches, based on the PI-PE model (see Table 7.3 and Figure 7.1) and handbooks on how to develop a theory- and evidence-based programme in general (e.g. Bartholomew Eldredge et al., 2016). Paying extra attention to the content of a new resilience-building programme is worth the effort as a well-designed programme is a prerequisite to reliably investigate the effectiveness of a programme (Vanhove et al., 2016).

When developing a programme, developers should be aware that there is not one approach to build resilience. In this thesis, we distinguished five different approaches (see Table 7.3). The choice of an approach depends on the timing of the programme in relation to the timing of the stressor: prior, during or after stressor exposure (Chmitorz et al., 2018). In our systematic literature review regarding the effectiveness of resilience-building programmes (see Chapter 4), we mainly found programmes that were planned during stressor exposure. We provided an example of a programme implemented during organizational change, namely the ResilienceWise programme that used a resource-based approach (see Chapter 5). In our systematic review (see Chapter 4), we found only one example of a programme offered prior to stressor exposure (Maunder et al., 2010) and no programmes offered after stressor exposure. We suspect that programmes offered prior to or after stressor exposure are not always called 'resilience-building programmes', but appear under different names. Programmes intended for use prior to stressor exposure may be called 'stress inoculation training', 'stress exposure training' (e.g. Meichenbaum, 1985) or '(emergency) preparedness training' (e.g. Qureshi, Merrill, Gershon, & Calero-Breckheimer, 2002). Programmes intended for use after stressor exposure may be called 'debriefing' (e.g. Adler, Bliese, McGurk, Hoge, & Castro, 2011) or 'critical incident stress debriefing' (e.g. Malcolm, Seaton, Perera, Sheehan, & Van Hasselt, 2005; Mitchell, Sakraida, & Kameg, 2003). Although these programmes are not called 'resilience-building programmes', they may very well meet the criteria for such programmes (see Table 7.2). Therefore, programme developers can assess these programmes and use elements in the development of their own programme.

Once a programme has been developed, we recommend it be presented as a 'resilience-building programme' only when it meets the criteria for such programmes outlined in Table 7.2. In our systematic literature review regarding the effectiveness of resilience-building programmes, we found many programmes called 'resilience programmes', without actually defining resilience, measuring resilience and/or specifying the stressor (see Chapter 4). Hence, these programmes did not meet the criteria in Table 7.2. A programme that does meet these criteria covers what is minimally expected of a

resilience-building programme. Therefore, we recommend practitioners use the criteria for resilience-building programmes (see Table 7.2) to control for quality and consistency.

Companies offering resilience-building programmes to their employees should be aware that the effectiveness of such programmes have not yet been established (see Chapter 4). Therefore, they cannot assume upfront that their own programme(s) are effective. To establish programme effectiveness, we recommend companies collaborate with resilience researchers to establish programme effectiveness.

In sum, organizations should invest in a climate where psychological resilience is seen as the responsibility of the whole system, rather than solely as an individual responsibility. This approach invites everyone to get involved in the process of building psychological resilience at work. A good starting point for this is to ask the question: what (more) can we do to build psychological resilience in each other as well as in ourselves?

7.6. REFERENCES

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Samenvatting

(Summary in Dutch)

'We're all in this together.'[14]

[14] Jo Dee Messina

SAMENVATTING

Hoe kan het dat sommige mensen zich succesvol aanpassen aan stressvolle situaties (*stressoren*) en anderen niet? Deze vraag staat centraal in onderzoek naar psychologische veerkracht. Organisaties zijn geïnteresseerd geraakt in dit concept door 1) de veranderende werkcontext, die steeds meer VUCA – vluchtig (*volatile*), onzeker (*uncertain*), complex en ambigu – is geworden, 2) de wereldwijde economische crisis in 2008; en 3) de COVID-19 crisis die op dit moment de wereld teistert. Organisaties worstelen vooral met de vraag hoe ze de veerkracht van medewerkers kunnen versterken. Het antwoord op deze vraag is niet eenvoudig, omdat er in de wetenschappelijke literatuur geen eenduidige opvatting bestaat van het begrip 'psychologische veerkracht'. Daarom geven we in dit proefschrift eerst een overzicht van de verschillende opvattingen en dragen we argumenten aan om veerkracht in de werkcontext te beschouwen als dynamisch proces. We beperken ons daarbij tot *psychologische* veerkracht en laten fysieke veerkracht buiten beschouwing. Het eerste doel van dit proefschrift is om inzicht te krijgen in veerkracht als dynamisch proces. Om dit te bereiken beantwoorden we twee vragen:

1. Wat is bekend over psychologische veerkracht als dynamisch proces: hoe wordt het gedefinieerd, gemeten en versterkt?
2. Hoe kan het dat mensen zich *verschillend* aanpassen aan werkgerelateerde stressoren?

Het tweede doel is om inzicht te krijgen in hoe het veerkrachtproces het beste versterkt kan worden. Om dit te bereiken beantwoorden we de volgende drie vragen:

3. Aan welke criteria moet een programma voldoen om beschouwd te worden als een procesgericht psychologisch veerkrachtprogramma?
4. Zijn bestaande procesgerichte veerkrachtprogramma's, waaronder het programma *VeerkrachtWijzer* (zie hierna), effectief in het versterken van psychologische veerkracht, zowel op de korte- als op de langere termijn?
5. Welke ingrediënten maken deze veerkrachtprogramma's effectief?

In hoofdstuk 2 tot en met 6 geven we antwoord op deze vragen.

Psychologische veerkracht als dynamisch proces

Hoofdstuk 2 geeft antwoord op de vraag wat er bekend is over psychologische veerkracht als dynamisch proces (onderzoeksvraag 1). Op grond van een systematisch literatuuronderzoek (21 studies gepubliceerd in de periode 2009-2018) maken we duidelijk dat opvattingen over veerkracht in de loop van de tijd veranderd zijn. In eerste instantie werd gedacht dat veerkracht een persoonlijke eigenschap was. Later werd het gangbaar om veerkracht te zien als een hulpbron (*resource*) of als de positieve uitkomst van een (adaptatie)proces. Deze opvattingen zijn inmiddels gedateerd, omdat hierin één

of twee condities ontbreken die onlosmakelijk verbonden zijn met veerkracht, namelijk de aanwezigheid van een stressor en positieve adaptatie als uitkomst. In een procesopvatting van veerkracht worden beiden wel meegenomen. Daarom zijn wetenschappers het er nu over eens dat veerkracht opgevat dient te worden als een dynamisch proces en dat een definitie van veerkracht tenminste drie ingrediënten dient te bevatten: 1) dynamisch proces, 2) stressor en 3) positieve adaptatie. Hoe het proces van veerkracht verloopt kan worden weergegeven in een dynamisch procesmodel. In hoofdstuk 2 maken we duidelijk dat een dergelijk model vijf elementen moet bevatten: 1) het niveau van aanpassing voorafgaand aan de stressor; 2) de stressor zelf; 3) mechanismen (mediërende factoren); 4) hulpbronnen (modererende factoren); en 5) de uitkomst van positieve adaptatie. Er bestaat nog geen consensus over een specifiekere invulling van dit procesmodel. Daarnaast hebben we geen enkel meetinstrument gevonden dat alle elementen in het proces van veerkracht meet. Ook bleek het aantal veerkrachtprogramma's dat gebaseerd is op een procesgerichte visie beperkt. We concluderen dat er nog weinig bekend is over het (precies) definiëren, meten en versterken van veerkracht, opgevat als dynamisch proces.

Deze samenvatting begon met de vraag die centraal staat in veerkrachtonderzoek: hoe kan het dat sommige mensen zich succesvol aanpassen aan stressoren en anderen niet? Deze vraag suggereert een ééndimensionale manier van denken over veerkracht – mensen passen zich wel of niet aan – die niet langer houdbaar is. In hoofdstuk 3 herformuleren we deze vraag daarom in: hoe kan het dat mensen zich op *verschillende manieren* aanpassen aan stressoren (onderzoeksvraag 2)? De literatuur onderscheidt namelijk meerdere vormen van adaptatie: 1) mensen die ogenschijnlijk niet geraakt worden door een stressor en op hetzelfde niveau blijven functioneren (*sustainability*); 2) mensen die beter functioneren dan voorheen (*thriving*); 3) mensen die wel geraakt worden door een stressor, maar in staat zijn om snel te herstellen (*recovery*); en 4) mensen die een diepgaande verandering ondergaan (*transformation*). Om deze verschillen te verklaren ontwikkelden we een nieuw veerkrachtmodel, het *Psychologische Immuniteit-Psychologische Elasticiteit* (PI-PE) model (zie figuur 3.1). Dit model definieert psychologische veerkracht als een dynamisch proces dat in gang gezet wordt door een specifieke stressor en gericht is op het versterken, behouden, herstellen of veranderen van iemands psychologisch functioneren. Dit model laat zien welke twee veerkrachtroutes mensen kunnen doorlopen na blootstelling aan een stressor, namelijk *psychologische immuniteit* en *psychologische elasticiteit*. Hierin spelen twee opeenvolgende mechanismes een kritieke rol. Het kritieke mechanisme in de immuniteitsroute is tolerantie: mensen zijn mentaal in staat om de stressor te verdragen en te blijven functioneren op hetzelfde niveau als voorheen (*sustainability*) of zelfs beter dan voorheen (*thriving*). Het kritieke mechanisme in de elasticiteitsroute is het geconstrueerde verhaal (*narrative construction*):

ondanks dat mensen geraakt worden door de stressor, blijken ze in staat om de gebeurtenis (op termijn) te integreren in hun zelf- en/of wereldbeeld, waardoor ze 'terugveren' en herstellen (*recovery*) of op een andere voet doorgaan dan vóór de stressor (*transformation*). Welke route iemand doorloopt en met welke uitkomst, hangt af van vijf factoren: 1) de aard, duur en de ernst van de stressor; 2) de mate waarin een persoon zich voorafgaand aan de stressor al (mentaal) heeft aangepast aan dit type stressor, bijvoorbeeld aan de hand van eerdere ervaringen; 3) de mate waarin een persoon ondanks de stressor kan blijven functioneren (*tolerance*); 4) de mate waarin een persoon in staat is om de ervaring met de stressor te integreren in het zelf- en/of wereldbeeld (*narrative construction*) en 5) de beschikbaarheid van hulpbronnen in de persoon zelf of in de omgeving om met de stressor om te gaan. We concluderen dat deze factoren verklaren hoe het komt dat mensen zich verschillend aanpassen aan werkgerelateerde stressoren.

Psychologische veerkracht versterken

In hoofdstuk 2 geven we ook antwoord op de vraag wat we moeten verstaan onder een procesgericht veerkrachtprogramma (onderzoeksvraag 3). Het antwoord op deze vraag is belangrijk omdat er veel programma's in omloop zijn onder de noemer 'veerkrachtprogramma' zonder dat ze uitleggen wat ze onder veerkracht verstaan en/of zonder veerkracht te meten. Op grond van een systematisch literatuuronderzoek (21 studies) formuleren we twaalf criteria waaraan een programma moet voldoen om aangemerkt te worden als een procesgericht veerkrachtprogramma (zie tabel 2.1). Deze criteria wijzen op het belang van: het specificeren welke arbeidspopulatie in welke bedrijfscontext behoefte heeft aan *psychologische* veerkracht in relatie tot welke specifieke stressor en welke vorm van positieve adaptatie. Daarnaast wijzen ze ook op het belang van het definiëren van het begrip veerkracht, het toelichten welk veerkrachtmodel gebruikt wordt, hoe veerkracht op basis daarvan gemeten en versterkt wordt, op welk moment in het veerkrachtproces, vanuit welke basis en met welk einddoel voor ogen. Deze criteria zijn bruikbaar voor het analyseren, evalueren, optimaliseren en vergelijken van veerkrachtprogramma's en dragen daarmee bij aan de kwaliteit en consistentie van veerkrachtprogramma's.

Naast deze criteria maken we op grond van het PI-PE model ook duidelijk dat er niet één soort veerkrachtprogramma bestaat, maar dat ze te classificeren zijn in vijf benaderingen (zie tabel 7.3), namelijk programma's die gericht zijn op 1) het verhogen van de tolerantie ten opzichte van een bepaalde stressor (*tolerance-enhancement approach*); 2) het ontwikkelen van een narratief dat positieve adaptatie bevordert (*narrative approach*); 3) het matigen van de intensiteit van de stressor (*measured approach*); 4) het versterken van persoonlijke hulpbronnen (*personal resource-based approach*); en 5) het bieden van externe hulpbronnen (*environmental resource-based approach*). Welke

benadering gekozen wordt is afhankelijk van a) of het een *specifieke* stressor betreft [benadering 1, 2, en 3] of minder specifiek [benadering 4 en 5] en b) of het programma *voorafgaand* aan de stressor wordt aangeboden [benadering 1, 2, 4 of 5], *gedurende* [benadering 2, 3, 4 of 5] of *na* de stressor [benadering 2, 4 of 5].

In hoofdstuk 4 geven we antwoord op de vraag hoe effectief procesgerichte veerkrachtprogramma's zijn in de werkcontext (onderzoeksvraag 4). Om deze vraag te beantwoorden hebben we een systematisch literatuuronderzoek verricht naar veerkrachtprogramma's in deze context. Dit onderzoek beperkte zich niet tot procesgerichte veerkrachtprogramma's. We hebben ook niet-procesgerichte programma's meegenomen. Slechts één van de twintig gevonden effectstudies onderzocht een procesgericht veerkrachtprogramma. Dit programma was nauwelijks effectief in het versterken van veerkracht op de korte termijn en niet effectief op de lange termijn. Van de overige, niet-procesgerichte programma's bleek 42% volledig effectief, 21% gedeeltelijk effectief en 37% niet effectief in het versterken van veerkracht op de korte termijn. Hoewel dit overzicht laat zien dat veerkrachtprogramma's effectief kunnen zijn, concluderen we dat we weinig weten over de effectiviteit van *procesgerichte* veerkrachtprogramma's.

Om een bijdrage te leveren aan kennisvermeerdering omtrent de effectiviteit van procesgerichte veerkrachtprogramma's hebben we in samenwerking met een consultancy bureau een veerkrachtprogramma ontwikkeld, genaamd *VeerkrachtWijzer* (*ResilienceWise*). Dit programma voldoet aan onze eerder opgestelde criteria en is gericht op het versterken van persoonlijke hulpbronnen (*personal resource-based*, zie tabel 7.3). In hoofdstuk 5 en 6 onderzoeken we de effectiviteit van dit programma aan de hand van twee quasi-experimentele longitudinale veldstudies met een 2 (experimentele en controle groep) x 3 (voormeting, nameting en follow-up meting na drie maanden) design. Participanten in beide studies waren kantoormedewerkers (respectievelijk 91 en 8), werkzaam bij een grote zorgverzekeraar in Nederland, die te maken hadden met een ingrijpende organisatieverandering. De eerste effectstudie maakt duidelijk dat *VeerkrachtWijzer* effectief was in het versterken van zes persoonlijke hulpbronnen bij deelnemers – hoop, doel in het leven, eigen-effectiviteit, grip op je omgeving, positieve emoties en positieve relaties – en twee indicatoren van positieve adaptatie – herstel en algemeen welbevinden –, gemeten direct na beëindiging van het programma en na drie maanden. Daarnaast nam de taakprestatie van deelnemers niet af, terwijl dat bij de controlegroep wel het geval was. Geen effecten werden gevonden voor optimisme en mindfulness. Ondanks het lage aantal participanten (n = 8), werden deze resultaten voor een groot deel bevestigd in de replicatiestudie die beschreven staat in hoofdstuk 6. De grootste effecten werden gevonden op doelgerichte persoonlijke hulpbronnen (hoop, eigen-effectiviteit en doel in het leven in de eerste studie en hoop, eigen-effectiviteit en

optimisme in de replicatiestudie). Dit kan te maken hebben met zowel het doelgerichte karakter van coaching, als ook met een behoefte aan richting in tijden van onzekerheid, zoals tijdens een organisatieverandering.

Tot slot geven we antwoord op de vraag wat een procesgericht veerkrachtprogramma effectief maakt (onderzoeksvraag 5). We onderzochten deze vraag in drie hoofdstukken. In hoofdstuk 4 konden we deze vraag niet beantwoorden voor procesgerichte veerkrachtprogramma's, aangezien we er slechts één vonden. Wel identificeerden we factoren die vermoedelijk bijdragen aan de effectiviteit van niet-procesgerichte veerkrachtprogramma's. Daarnaast keken we in hoofdstuk 5 en 6 naar de (waarschijnlijk) meest belangrijke verklarende factor in onderzoek naar de effectiviteit van coaching, namelijk de kwaliteit van de relatie tussen de coach en de cliënt. In ons onderzoek bleek de kwaliteit van die relatie gerelateerd te zijn aan veranderingen in hoop, optimisme, eigen-effectiviteit, grip op omgeving, doel in het leven, positief affect, taakprestatie, herstel en algemeen welbevinden, maar niet aan veranderingen in positieve relaties en mindfulness. Vanwege het lage aantal participanten konden we deze bevindingen niet repliceren. Op grond van deze drie hoofdstukken concluderen we dat de volgende factoren mogelijk bijdragen aan de effectiviteit van procesgerichte veerkrachtprogramma's: programma's die 1) voldoen aan de criteria voor procesgerichte veerkrachtprogramma's, zoals *VeerkrachtWijzer* (zie tabel 2.1); 2) gericht zijn op één specifieke stressor; 3) één programma benadering hanteren (zie tabel 7.3); en 4) een één-op-één aanpak hebben. Als het veerkrachtprogramma een één-op-één (coaching) aanpak heeft, adviseren we om ook de kwaliteit van de relatie tussen coach en cliënt mee te nemen. Het is aan te bevelen om in toekomstig onderzoek rekening te houden met deze factoren.

Conclusies en aanbevelingen

Dit proefschrift draagt bij aan meer duidelijkheid over het begrijpen van veerkracht als dynamisch proces en over manieren om dit proces te versterken in de werkcontext. Daarbij tekenen we aan dat we ons beperkt hebben tot psychologische veerkracht in de arbeidscontext en ons niet richten op andere vormen van veerkracht in deze of in andere contexten, zoals fysieke veerkracht en de veerkracht van families, buurten, teams, organisaties en ecosystemen. Dit proefschrift beperkt zich ook bijna volledig tot papers die gepubliceerd zijn in Engelstalige wetenschappelijke tijdschriften. Hierdoor kan een vertekend beeld zijn ontstaan (*publication bias*). Ondanks deze en andere beperkingen die we in hoofdstuk 7 hebben samengevat, biedt dit proefschrift veel aanknopingspunten voor verder onderzoek evenals aanbevelingen voor de praktijk.

Onze belangrijkste aanbeveling is om psychologische veerkracht op te vatten als een dynamisch (adaptatie)proces en niet langer als een (ontwikkelbare) persoonlijke

eigenschap. Daarbij benadrukken we dat dit proces niet per se positief is. Dit geldt alleen voor de uitkomst van het proces (positieve adaptatie), maar meestal niet voor de weg ernaartoe. Dit betekent dat we niet te licht moeten denken over veerkrachtontwikkeling.

Onderzoek naar veerkracht zou zich dienen te richten op de werking van het dynamisch proces, op het ontwikkelen van een instrument om dit proces in kaart te brengen én op het onderzoeken van de effectiviteit van (nog te ontwikkelen) procesgerichte veerkrachtprogramma's. Het PI-PE model (figuur 3.1) kan hierbij als leidraad dienen, samen met de criteria voor procesgerichte veerkrachtprogramma's (tabel 2.1), de benaderingen om veerkracht te versterken (tabel 7.3) en de factoren die mogelijk bijdragen aan de effectiviteit van veerkrachtprogramma's (zie antwoord op onderzoeksvraag 5 in de vorige paragraaf). Om de effectiviteit van veerkrachtprogramma's te onderzoeken adviseren we onderzoekers om meer realistische onderzoeksdesigns te overwegen dan een gerandomiseerd gecontroleerd design (RCT). Realistische designs richten zich namelijk niet alleen op de vraag of een programma werkt of niet, maar meer op de vraag *wat* werkt voor *wie* onder *welke* omstandigheden. Daarmee is het minder statisch dan een RCT en lijkt het meer geschikt om een dynamisch proces zoals psychologische veerkracht te onderzoeken.

Bedrijven die geïnteresseerd zijn in het versterken van psychologische veerkracht van hun werknemers dienen zich te realiseren dat hiervoor geen snelle oplossingen bestaan. Het PI-PE model maakt dit duidelijk: veerkracht wordt niet in het algemeen versterkt, maar in relatie tot een *specifieke* stressor. Bedrijven dienen daarom eerst in kaart te brengen welke stressoren onvermijdelijk zijn in de eigen organisatie en voor welke stressor(en) medewerkers veerkracht dienen op te bouwen. Als de stressor eenmaal gekozen is, adviseren we om tijd te nemen voor het ontwikkelen van het veerkrachtprogramma. We hebben in de wetenschappelijke literatuur namelijk nog geen voorbeeld van een *best practice* gevonden. Bedrijven dienen ook goed te overwegen welke benadering het beste past om veerkracht te versterken. Op grond van het PI-PE model hebben we vijf verschillende manieren geïdentificeerd (zie tabel 7.3). Daarnaast hebben we criteria voor procesgerichte veerkrachtprogramma's opgesteld (zie tabel 2.1) als hulpmiddel om te bewaken dat het (te ontwikkelen) programma aan de minimale eisen voldoet. We adviseren bedrijven om deze criteria te gebruiken en samen te werken met wetenschappers om veerkrachtprogramma's op effectiviteit te onderzoeken. Tot slot adviseren we bedrijven om te investeren in een organisatieklimaat waarin veerkracht beschouwd wordt als een complex systeemvraagstuk in plaats van het te personaliseren. Psychologische veerkracht is namelijk geen opgave voor de eenling, maar voor allen. Een goed begin om een dergelijk klimaat te creëren is de vraag: wat kunnen we (meer) doen om elkaars psychologische veerkracht te versterken naast die van onszelf?

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'Voorbij ideeën van goed en kwaad
is er een land waar ik Jou zal ontmoeten.'[15]

[15] Vrij naar Jalal ad-Din Rumi

DANKWOORD

Een proces is nooit af. Toch moet je soms een punt zetten. Dit punt is gekomen voor mijn proefschrift. Het is het resultaat van een waanzinnige reis die bijna tien jaar heeft geduurd. Hoe ik die reis heb ervaren, is een verhaal op zich. Hoewel ik er iets over schrijf in mijn voorwoord, is een proefschrift niet de plek om dit verhaal te vertellen. Ik bewaar het voor bij de borrel of in een ander boek. Wat ik nog wel kwijt wil, is dat ik deze reis niet helemaal alleen heb afgelegd. Daarom wil ik van de gelegenheid gebruik maken om een aantal reisgenoten te bedanken.

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About the author

'I began to study the subject for the good of my soul.'[16]

[16] Carnegie, 1937

ABOUT THE AUTHOR

Richta IJntema (1970) graduated from Utrecht University in 1996 with a degree in Clinical and Health Psychology. After graduation, she specialized in university teaching, (professional skills) training and coaching psychology. In 2001, she became an assistant professor at the department of Social, Health and Organizational Psychology at Utrecht University. Here, she is responsible for a master's programme in training and coaching. In addition, Richta actively develops e-learning programmes for Utrecht's LifeLong Learning programme (e.g. on communication skills, reflective practice, feedback, peer coaching, career skills). Her research focus is on psychological resilience(-building programmes) in organizations. Alongside her work at the university, she works as an independent occupational and organizational psychologist providing personal coaching, skills training programmes, resilience-building programmes, train-the-trainer programmes, train-the-coach programmes and coaching supervision. Richta's qualifications and registrations include: University Teacher Qualification (2000); Registered Training Psychologist, Dutch Association of Psychologists (NIP; 2005); Accredited Coaching Psychologist, International Society for Coaching Psychology (ISCP; 2011); Registered Occupational and Organizational Psychologist, Dutch Association of Psychologists (2013; 2018); and Registered EuroPsy Specialist in Work and Organizational Psychology, European Federation of Psychologists' Associations (EFPA; 2014).