Building resources during organizational change: A longitudinal quasi-experimental field study on the effectiveness of a psychological resilience intervention

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Abstract

The purpose of this quasi-experimental field study was to investigate the immediate and three-months follow-up effects of 'ResilienceWise', a resource-based resilience intervention, using a 2 (group) x 3 (time) mixed design. Participants in the intervention group were employees of a large Dutch insurance company facing organizational change. 91 participants completed the blended intervention: a combination of four coaching sessions and an online self-help intervention. The results of this group were compared to the results of a non-intervention control group of 140 employees. Positive immediate and long-term effects were found on the resilience resources of hope, self-efficacy, purpose in life, and positive affect; only immediate effects were found on positive relationships; no effects were found on optimism, environmental mastery, and mindfulness. Long-term, but not immediate effects were found on indicators of positive adaptation: task performance, general health, and recovery. A factor that predicted most of the immediate effects of the intervention was the strength of the coaching relationship. The results of this study confirm that resources can be enhanced in employees during organizational change and extend the existing evidence base that resource-based resilience interventions can be effective. These results are promising for employees in need of psychological resilience during organizational change.

Keywords: psychological resilience; resources; intervention; workplace; effectiveness; coaching relationship; stressor; positive adaptation

Practitioner points

- Supporting employees in building their personal and social resources, like hope, purpose in life, self-efficacy, and positive relationships, can be an effective resilience building strategy during organizational change.
- The strength of the relationship between a coach and client has a positive impact on the effect of resilience coaching. Therefore, coaches should invest in developing a strong working alliance with their clients that embodies agreements on their tasks, goals, and their bond.

'Interest in resilience seems to rise in troubled times' (Masten, 2014, p. 3). In the workplace, two 'troubling' developments have contributed to an emerging interest in psychological resilience: the global financial crisis (Bardoel, Pettit, De Cieri, & McMillan, 2014) and the changing world of work, also referred to as the VUCA world. VUCA is an acronym used for the volatile, uncertain, complex and ambiguous work context that employees are facing in modern organizations (Kingsinger & Walch, 2012). Given these developments, psychological resilience is a promising concept. The promise of resilience is that people need not necessarily fall victim to these difficult circumstances, 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 'strengths' model of healthy development despite difficult circumstances (Panter-Brick, 2014; Windle, 2011). Because of its promise and appeal, there is a growing interest to find effective ways to enhance psychological resilience in the workplace (Southwick, Pietrzak, & White, 2011; Cooper, Flint-Taylor, & Pearn, 2013).

Many organizations have developed resilience programs for their employees, like the US Army (Comprehensive Soldier Fitness program; Cornum, Matthews & Seligman, 2011), GlaxoSmithKline (GSK Resilience program; Cooper et al., 2013), and Shell (Shell Health Resilience program; De Valk, 2013). To make it worthwhile for organizations to invest in such programs, it is important to demonstrate their effectiveness. A review (Robertson, Cooper, Sarkar, & Curran, 2015) and meta-analysis (Vanhove, Herian, Perez, Harms, & Lester, 2016) have demonstrated that workplace resilience interventions can indeed be effective in enhancing psychological resilience and mental health in employees. However, the small amount of intervention studies, 14 studies in the review and 37 in the meta-analysis, indicated a need for further systematic research in this area. The first aim of the current study is to accumulate empirical evidence on the effectiveness of resilience interventions in the

workplace by evaluating a new workplace resilience intervention 'ResilienceWise'. This is a blended intervention, consisting of face-to-face coaching sessions, supported by the evidence-based online self-help intervention 'Psyfit' (psychological fitness online; www.psyfit.nl; Bolier et al., 2013). The intervention was developed to increase psychological resilience in employees, specifically during organizational change.

The unique contribution and second aim of this study is to demonstrate that the strength of the coaching relationship between the coach and the client is a significant predictor of the intervention outcomes. The coaching relationship is defined as an agreement between the coach and the client on their tasks, goals, and their bond (Bordin, 1979). In the literature on the effectiveness of psychotherapy, the strength of this relationship is known to be a consistent common factor explaining therapy outcomes (Horvath & Symonds, 1991; Horvath, Del Re, Flückiger, & Symonds, 2011). In the literature on the effectiveness of coaching interventions, there is emerging evidence that relationship strength is also a factor explaining coaching outcomes (Baron & Morin, 2009; De Haan, Grant, Burger, & Eriksson, 2016; Lai & McDowall, 2014). To the best of our knowledge, this coaching relationship strength has not been included in *resilience* coaching intervention studies before.

Theoretical background

An intervention should meet four basic requirements to be regarded as a resilience intervention: 1) the general aim of the intervention is to enhance resilience, 2) the concept of resilience is defined and 3) assessed, and 4) the stressor that triggers the need for resilience is specified (IJntema, Burger, & Schaufeli, 2017a). The workplace resilience intervention under study meets these requirements. The intervention was developed for a specific department in a large Dutch insurance company. The stressor that triggered the need for a resilience intervention 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 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 context of change, organisations are in need of resilient and resourceful employees (Van den Heuvel, 2013).

The general aim of the intervention was to enhance psychological resilience. Psychological resilience is a process, that is triggered by a specific stressful event or specific stressful circumstances and that is manifested by positive adaptation to that specific stressor (IJntema, Schaufeli, & Burger, 2017). Several resilience building strategies may be adopted to enhance positive adaptation, depending on the timing of the intervention: before, during or after the stressor (IJntema, Burger, & Schaufeli, 2017b). Since the intervention took place while the stressor (organisational change) was present, enhancing resources was chosen as the best resilience building strategy. Resource building is the most common approach to workplace resilience interventions (Vanhove et al., 2016). By building resources, the company aimed to shift the attention of employees away from the negative effects of the changing work context, aimed to help them become more resourceful, efficacious and adaptive, and to help them to take greater responsibility to handle uncertainty and change on an on-going basis.

In the resilience literature, resources are most often labelled as ‘protective’ factors: ‘influences that modify, ameliorate, or alter a person's response to some environmental hazard that predisposes to a maladaptive outcome’ (Rutter, 1985, p. 600). Resilience resources are important during the process of psychological resilience, because resources enable individuals to adapt to the circumstances they encounter, either by protecting them against harm or by promoting well-being (Davydov, Stewart, Ritchie, & Chaudieu, 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 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, like organizational change. The workplace resilience intervention 'ResilienceWise' was developed to accomplish resource building in employees during organizational change.

Resilience resources

Research has demonstrated that resource building is an effective resilience building strategy in the workplace (Vanhove et al., 2016). Resilience resource building interventions typically focus on resources that are psychosocial in nature and amendable (Vanhove et al., 2016; Masten, 2014). We selected eight resources as the focus of our intervention for both empirical and practical reasons: hope, optimism, self-efficacy, purpose in life, environmental mastery, positive affect, mindfulness, positive relationships (see Table 1). Our empirical reasons were, that these resources were most commonly selected in other resilience resource interventions (Vanhove et al., 2016) and/or demonstrated a large effect in resilience studies (Lee, Nam, Kim, Kim, Lee, & Lee, 2013), and/or were part of the short-list of widely reported factors associated with resilience (Masten, 2014). Our practical reason was that we chose resources that were part of an existing online intervention 'Psyfit' (Bolier et al., 2013), which could make our intervention more cost-effective. Two resources, hope and self-efficacy, were not part of Psyfit. Together with optimism, they have in common that they are all part of the concept of psychological capital (Luthans, Youssef, & Avolio, 2007) and act as pathways to resilience (Luthans, Vogelgesang, & Lester, 2006). The eight resources that were targeted in the resilience intervention under study, were presented to participants in the intervention group as important 'psychological capital' during times of change.

PLEASE INSERT TABLE 1 AROUND HERE

The first aim of the current study was to investigate the immediate and three-months follow-up effects of the resilience intervention 'ResilienceWise' on the eight aforementioned resilience resources in the intervention group compared to a non-intervention control group. We formulated the following hypotheses:

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

Hypothesis 1b: The immediate effects on eight resilience resources (hypothesis 1a) in the intervention group compared to the control group are still present three months after completion of the intervention.

Positive adaptation

Positive adaptation is regarded as the manifestation of the process of psychological resilience (IJntema, Schaufeli et al., 2017). Therefore, we extended the first aim of the current study to not only demonstrate an effect of the intervention on resilience resources, but also on three indicators of positive adaptation: task performance, general health, and recovery from stress (see Table 1 for definitions). These could also be regarded as indicators of sustainable

employability, which allow employees to continue to make a valuable contribution through their work, while safeguarding their health and welfare (Van der Klink et al., 2016). We formulated the following hypotheses:

Hypothesis 2a: The resilience intervention sustains or enhances task performance and general health, and significantly enhances recovery from stress in the intervention group compared to a non-intervention control group.

Hypothesis 2b: The immediate effects on three indicators of positive adaptation (hypothesis 2a) in the intervention group compared to the control group are still present three months after completion of the intervention.

Coaching relationship

The second aim of the current study was to investigate whether the effectiveness of 'ResilienceWise' could be explained by the strength of the relationship between the coach and coachee. We formulated the following hypothesis:

Hypothesis 3: In the intervention group, the coaching relationship strength is positively related to (changes in) the resilience resources and to (changes in) positive adaptation immediately after the intervention ends.

Method

Design

The present study was a quasi-experimental field study that used a mixed 2 (intervention and control group) x 3 (time: pre-test, post-test, follow-up) MANOVA design. Because the intervention targeted all members of a specific department in the organization, randomization and a waitlist control group were not possible. 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 intervention and control groups were rated on the dependent variables two weeks before the start of the intervention (pre-test), and immediately (post-test) and three months (follow-up) after the intervention. Figure 1 shows the number of participants in the intervention and control groups at each time point, as well as the response and drop-outs rates.

PLEASE INSERT FIGURE 1 AROUND HERE

Participants and procedure

241 employees in one specific department of the insurance company were invited by the department manager to participate in the intervention. The intervention was intended for employees who had at least a one-year contract. Employees that met this criterion received a brochure about the intervention and were invited to a questions and answers session to ensure

that the reasons behind the intervention were understood, as well as the aim and content of the intervention, the required investment, and the expected results. Employees were encouraged by their team leaders to give the intervention a chance and attend at least the first coaching session (intake). 97.1% of the employees responded to this request. Employees who did not want to participate in the intervention were asked to report their reasons for non-compliance to their team leader. Reasons for not participating in the intervention were transfer to another department and no felt need for the intervention.

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

After registration in the intervention, each participant received an invitation for the first coaching session and was 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. 234 participants completed the first questionnaire and started the intervention, of whom 158 participants completed the questionnaires at all time points. As a token of appreciation, these participants received the book ‘Mental Fitness’ (Bolier, Haverman, Walburg, 2010) and continued to have access to Psyfit online 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 intervention did not meet their individual needs.

The intervention consisted of four individual coaching sessions and the completion of two out of six e-modules (see section 'intervention' below). 91 participants completed the full intervention. This group constituted our experimental group (n = 91). To tests our hypotheses on the effectiveness of the (full) intervention, the results of this full intervention group were compared to the control group. 67 participants did not complete the full intervention. They attended all coaching sessions, but did not participate in the e-modules or only took one e-module.

To avoid the effect of transfer, 457 employees who did not work at the same department as the intervention group were approached as the control group. These employees were facing the same merger as employees in the intervention 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 intervention group. 50.8% agreed to participate in the study and completed the first questionnaire. The other 49.2% did not respond to the (repeated) invitation, had no time to participate, or had other priorities. 140 employees completed the questionnaires at all time points. As a token of appreciation, they received the book 'Mental Fitness' (Bolier et al., 2010) and a one-year access to Psyfit online. The total drop-out in the control group was 39.6%. One unfortunate reason was, that the company changed the email 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.

Intervention

The blended intervention 'ResilienceWise' took place over a period of thirteen weeks. Table 2 gives an overview of the structure and objectives of 'ResilienceWise'. The four one-hour personal coaching sessions were regarded as work time and the initial assessment and online intervention Psyfit as personal time.

PLEASE INSERT TABLE 2 AROUND HERE

After completing the initial assessment, participants received an individual feedback report per e-mail on how they scored on resilience resources. The results of this assessment were discussed during the first coaching session and used to help a participant set personal goals for the next coaching sessions and select the first e-module in Psyfit. The coaching sessions were planned every four weeks. During the second and third coaching session participants evaluated their progress on personal goal attainment and resource building, adjusted personal goals if necessary, and developed action plans to work on goal attainment and resource building in between coaching sessions. During the last session, the coaching outcomes were determined, an action plan was drafted to support resource building in the future, and the coaching process was evaluated.

Psyfit online supported resource building in between coaching sessions. Participants were advised to complete at least two e-modules as part of the intervention program: the first e-module between the first and second coaching session; the second e-module between the second and third coaching session. Psyfit online 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 online, participants received an email with a personal username and password. Each Psyfit e-module contains four lessons, one lessons per week. Each lesson consists of psycho-education 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 email 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.

Measures

Table 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 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 only three cases Cronbach's alpha does not meet this criterion, but is higher than .60, which is considered an absolute minimum (i.e. self-efficacy at pre-test measurement for the full intervention group; optimism at pre- and post-test measurement for the unfinished intervention group).

PLEASE INSERT TABLE 3 AROUND HERE

Resilience resources

Hope was measured with the Dutch translation (Ouweneel, 2012) of the six-item State Hope Scale (Snyder, Sympson, Ybasco, Borders, Babyak, & Higgins, 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 a work-related goals.

Optimism was measured with 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 with 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 or her capabilities to succeed at challenging tasks at work.

Purpose in life was measured with the corresponding six-item scale of the Amsterdam Well-being Scale (AWS; Van Dierendonck, 2005). The AWS is the Dutch translation of the scales of psychological well-being (Ryff, 1989). 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.

Environmental mastery was measured with the corresponding six-item scale of the AWS (Van Dierendonck, 2005). 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 efficacious in dealing with their environments in general.

Positive relationships was measured with 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.

Positive affect was measured with Dutch six-item version (Schaufeli & Van Rhenen, 2006) of the positive emotions scale of the Job-related Affective Well-being 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 with 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 adaptation

Task performance was measured with 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, that are formally required for a job.

Recovery was measured with the Dutch translation (Leontjevas, De Beek, Lataster, & Jacobs, 2014) of the six-item Brief Resilience Scale (Smith, Dalen, Wiggins, Tooley, Christopher, & Bernard, 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 with 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 experiences no psychological distress.

Coaching relationship

Coaching relationship was measured with 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'. A high score indicates a strong coaching relationship. Only participants in the intervention group rated each item at post-test measurement on a seven-point Likert scale ranging from never (1) to always (7).

Data analysis

Data were analysed using SPSS 24. Since we could not randomly assign participants to the intervention and the control group, we conducted preliminary analyses to examine whether these groups were similar. For that purpose, we conducted independent t-tests to check for possible differences between the full intervention group and the control group regarding age, years in function, years in organization, and the dependent variables at pre-test measurement, and χ^2-tests to check for possible differences in gender, marital status, education, tenure and management position. In addition, we conducted similar tests to check whether participants in the full intervention group differed from participants who dropped out of the intervention, to check whether participants in the control group differed from participants who dropped out of the control group, and to check whether participants in the unfinished intervention group differed from participants in the full intervention group and in the control group.

To determine whether the full intervention compared to no intervention had an overall effect on resilience resources (hypothesis 1) and on positive adaptation (hypothesis 2), we conducted 2 (full intervention group x control 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. A RM-MANOVA provides answers as to whether the full intervention group and the control group differ significantly on resilience resources and on positive adaptation (main effect of group), 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, whether resilience resources and positive adaptation changed differently for each group over time (interaction effect).

Provided that the RM-MANOVA showed a significant interaction effect, we subsequently conducted 2 (full intervention group x control group) x 3 (time) repeated measures univariate analyses of variances (RM-ANOVA) on all the separate dependent variables with time as a within-subject factor and group as a between subject factor. A RM-ANOVA provides an answer as to whether the full intervention compared to no intervention had an effect on each separate dependent variable. To determine whether the significant interaction effects concerned immediate and/or long-term effects, simple comparisons were conducted of post-test measurement versus pre-test measurement (immediate effects; hypotheses 1a and 2a), and follow-up measurement versus pre-test measurement (long-term effect; hypotheses 1b and 2b). Additionally, we conducted similar RM-(M)ANOVA tests to determine the main, time, and interaction effects of the unfinished intervention compared to no intervention on resilience resources and on positive adaptation.

To test our third hypothesis that – for the full intervention group – the coaching relationship strength is positively related to (changes in) resilience resources and to (changes in) positive adaptation at post-test measurement (hypothesis 3), 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 full intervention on the identical dependent variable at post-test measurement. In step 2, we added the coaching relationship as the second predictor, to test whether its strength contributed significantly to the effect of the full intervention on the identical dependent variable at post-test measurement.

Results

Preliminary analyses

The characteristics of participants in the full intervention group, the unfinished intervention group and the control group are shown in Table 4. To examine possible sample difference, we tested whether the full intervention group and the control group were similar on the characteristics listed in Table 4 and on the dependent variables at pre-test measurement listed in Table 5. No significant differences were found between these groups regarding age, living with a partner or not, management position, years in function, years in organization, hope, optimism, purpose in life, environmental mastery, positive affect, and positive relationships. Significant differences were found regarding the other variables: compared to the control group, the full intervention group consisted of significantly more women than men ($\chi^2[1] = 8.96$; $p < .01$), significantly more lower than higher educated workers ($\chi^2[1]= 10.58$; $p < .01$), and significantly more temporary than permanently employed workers ($\chi^2[1] = 5.88$; $p < .05$). In addition, participants in the full intervention group scored lower than the control group on self-efficacy ($t = -2.25$; $p < .05$), and lower on mindfulness ($t = -2.32$; $p < .05$) at pre-test measurement.

PLEASE INSERT TABLE 4 AROUND HERE

Two drop-out analyses were executed: one for the full intervention group and one for the 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 full intervention 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 full intervention 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 intervention. 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) regarding the demographic variables and the dependent variables at pre-test measurement.

Finally, the scores of the unfinished intervention group (n = 67) were compared to the scores of the full intervention group (n = 91) and to the scores of the control group (n = 140). Between participants in the full and unfinished intervention group, we found no significant differences regarding the demographic variables and the dependent variables at pre-test measurement. Between the unfinished intervention group and the control group, we found that the unfinished intervention group consisted of significantly more singles than the control group ($\chi^2[1] = 4.21$; $p < .05$), more lower educated workers ($\chi^2[1] = 13.35$; $p < .001$), and more temporary employed workers ($\chi^2[1] = 5.88$; $p < .05$). No differences were found regarding age, gender, management position, years in function, years in organization and the dependent variables at pre-test measurement.

PLEASE INSERT TABLE 5 AROUND HERE

Immediate and long-term effects on resilience resources

It was hypothesized that the full intervention compared to no intervention would have positive effects immediately after the intervention on resilience resources (hypothesis 1a), and that these effects would sustain after three months (hypothesis 1b). A 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.

PLEASE INSERT TABLE 6 AROUND HERE

As can be seen from Table 6[1], RM-ANOVA's for each separate resilience resource demonstrated that significant time x group interaction effects were found for all resilience resources, except for optimism and mindfulness. To determine whether these significant interaction effects concerned immediate and/or long term effects, simple comparisons were conducted comparing post-test measurement versus pre-test measurement (immediate effects; hypothesis 1a), and follow-up versus pre-test measurement (long term effects; hypothesis 1b).

[1] As participants in the full intervention group scored lower than the control group on self-efficacy and lower on mindfulness at pre-test measurement, we also analysed the data using multiple regression analysis. We found similar results as the results presented in Table 6. Data analyses are available upon request from the corresponding author.

To correct for multiple comparisons, we applied a stricter significance level ($p < .01$). Both the immediate and long-term time x group interaction effects were significant for hope, self-efficacy, purpose in life, and positive affect; only immediate effects were found for positive relationships. The effect sizes were small to medium (see Table 6). Figure 2 visualizes the positive immediate and long-term effects on hope, self-efficacy, purpose in life and positive affect. As can been seen from Figure 2, 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 full intervention compared to no intervention had positive immediate and long-term effects on hope, self-efficacy, purpose in life, and on positive affect and immediate effects on positive relationships. No effects were found on optimism, environmental mastery and mindfulness. Hypotheses 1a and 1b are partially confirmed.

PLEASE INSERT FIGURE 2 AROUND HERE

Immediate and long-term effects on positive adaptation

It was hypothesized that the full intervention compared to no intervention would have immediate positive effects on positive adaptation (hypothesis 2a), and that these effects would sustain after three months (hypothesis 2b). A 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.

As can be seen from Table 6, RM-ANOVA's for each separate indicator of positive adaptation demonstrated that significant time x group interaction effects were found for all

indicators of positive adaptation. To determine whether these significant interaction effects concerned immediate and/or long term effects, simple comparisons were conducted comparing post-test versus pre-test measurement (immediate effects; hypothesis 2a), and follow-up versus pre-test measurement (long-term effects; hypothesis 2b). To correct for multiple comparisons, we applied a stricter significance level ($p < .01$). Long-term effects, but not immediate effects, were significant for all indicators of positive adaptation with medium effect sizes (see Table 6). Figure 3 visualizes that task performance is sustained, rather than enhanced in the intervention group, compared to a decline in the control group. As can be seen from Table 5, the average scores on recovery and general health increased at post-test measurement in the intervention group, but did not reach significance. Based on these results, is likely to assume that the full intervention protected from a decline in task performance, and contributed to a delayed increase in recovery and general health. Hypothesis 2a is rejected and hypothesis 2b is confirmed.

PLEASE INSERT FIGURE 3 AROUND HERE

Coaching relationship

For the full intervention group, it was hypothesized that the strength of the coaching relationship is 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 7 shows that that the 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.

PLEASE INSERT TABLE 7 AROUND HERE

Additional analysis

To test whether the unfinished intervention compared to no intervention had an effect on resilience resources and on positive adaptation, we conducted RM-MANOVA's on these groups of dependent variables with the unfinished intervention 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 resilience resources ($F[16, 190] = 3.09$; $p < .001$; $\eta_p^2 = .207$) and on positive adaptation ($F[6, 200] = 3.10$; $p < .01$; $\eta_p^2 = .085$). No significant main effects or interaction effects were found on resilience resources nor on positive adaptation. Separate univariate analyses also did not demonstrate significant interaction effects, except for purpose in life ($F[2, 410] = 4.61$; $p < .05$; $\eta_p^2 = .022$) and for positive affect ($F[2, 410] = 3.10$; $p < .05$; $\eta_p^2 = .022$). This means that the unfinished intervention compared to no intervention had no immediate and long-term effects on resilience resources and on positive adaptation.[2]

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[2] We also conducted a RM-MANOVA to compare the full intervention group (n = 91) and the unfinished intervention group (n = 67) on the resilience resources and on positive adaptation. No significant interaction effect was found. Data analyses are available upon request from the corresponding author.

As the strength of the coaching relationship significantly contributed to the effect of the full intervention, we assumed that the relationship strength might predict whether or not a participant would finish the intervention. To test this assumption, we conducted logistic regression analyses with the two intervention groups (full and unfinished) as the dependent variable and the resilience resources, the indicators of positive adaptation and the coaching relationship as predictors. The results show that coaching relationship strength significantly predicts whether or not a participant would finish the intervention ($B = 0.62$; $SE = 0.24$; $p < .05$; $OR = 1.85$), as does positive affect at pre-test measurement ($B = 0.92$; $SE = 0.44$; $p < .05$; $OR = 2.51$). The other seven resilience resources and the indicators of positive adaptation did not contribute to the selection.

Discussion

The first aim of this study was to demonstrate that the workplace resilience intervention 'ResilienceWise' was effective in enhancing both resilience resources and positive adaptation in employees who were facing organizational change at work. Regarding the effects on resilience resources (hypotheses 1a and 1b), we found immediate and long-term effects in the intervention group compared to a non-intervention control group on the resources of hope, purpose in life, self-efficacy, and positive affect; only immediate effects on positive relationships; and no effects on environmental mastery, mindfulness, and optimism. Regarding the effects on positive adaptation (hypotheses 2a and 2b), we found long-term, but not immediate effects on positive adaptation, meaning that employees in the intervention group were able to sustain their task performance and general health, and enhance their recovery from stress over a period of three months compared to a non-intervention control

group. The effect sizes were small to medium, which is quite common in resilience interventions that are focused on prevention, rather than treatment (Vanhove et al., 2016).

The strongest effects were found on the resilience resources of hope, purpose in life and self-efficacy. These resources 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 and the persistence to achieve 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 intervention. 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 for the effects on goal-related resources may be that such goal-related resources may be particularly important during organizational change: organizational change comes with uncertainty and enhances people's need for direction (Van den Heuvel, 2013). Apparently, the intervention supported employees in (re)finding direction and (re)gaining feelings of self-control during organizational change. Over time, the intervention protected employees from a decline in task performance and general health and enhanced recovery. These long-term effects on indicators of positive adaptation suggest that resilience resources may have mediated the effects on positive adaptation on positive adaptation[3]. This can be explained by the Conservation of Resources theory (Hobfoll, 1989): their enhanced resources may have enabled employees to better adapt to organizational

[3] We conducted additional analyses, that support the notion that (some) resilience resources mediated the effect on each separate indicator of positive adaptation .These data analyses are available upon request from the corresponding author.

change. These results are promising for employees in need of psychological resilience during organizational change.

After participants completed the intervention, organizational change continued. This may have affected their scores on environmental mastery, mindfulness and optimism. Compared to pre-test measurement, the average scores on these resources increased immediately after the intervention, but did not reach statistical significance. Enhancing environmental mastery and work-related optimism may not be the best strategy during on-going organizational change. The on-going presence of the stressor could have prevented employees to experience mastery over their environment and be optimistic about their work. Rather than environmental control, it may be better to focus on enhancing active coping or self-control during on-going change; and rather than optimism in the work context, where it is unclear what to expect, it may be better to focus on enhancing positive expectancies in general. An explanation for the non-significant effects on mindfulness may be that our intervention did not focus exclusively on mindfulness. Other workplace resilience interventions that did demonstrate an effect on mindfulness (Burton, Pakenham, & Brown, 2010; Pidgeon, Ford, & Klaassen, 2014) have a more exclusive focus on mindfulness.

The second aim of this study was to investigate whether the immediate effects of the resilience intervention could be explained by the strength of the relationship between the coach and the client (hypothesis 3a and 3b). By including coaching relationship strength in this study, we aimed to build a bridge between studies on the role of common factors in coaching and therapy, and studies on the effect of resilience interventions. The results of this study indicate that coaching 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. An additional finding was that the strength of the coaching relationship

predicted whether or not participants would adhere to the program and complete the full intervention. These results extend the existing knowledge base that the strength of the coaching relationship is a consistent common factor explaining the effectiveness of coaching (De Haan et al., 2016). Researchers studying the effectiveness of *resilience* coaching interventions should consider including this factor as an explanatory variable in their intervention studies.

Limitations

A clear limitation of this study was, that it was not a randomized control trial (RCT). Without randomization, the intervention and control group cannot be regarded as equivalent, which limits the internal validity of this study. Differences between the full intervention and the 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, than the intervention group had less resources at the start of the intervention than the control group. A confounding variable, that may have negatively affected the results of this study, is that the intervention group experienced an additional stressor – changing governmental policies – over and above the merger that both groups were facing. Despite this limitation, we did manage to set up a between group design, which is regarded as more rigorous than a within-group design (Vanhove et al, 2016); we did manage to recruit a large sample, which enhances the reliability of our findings; to gather longitudinal data; and to conduct research in a natural setting, which enhances the external validity of this study.

Another limitation of this study – and most resilience intervention studies (Baumeister & Alghamdi, 2015) – is, that positive adaptation was measured by self-report measures. Positive adaption is regarded as the visible manifestation of the process of psychological resilience (IJntema, Schaufeli et al., 2017) and should be measured by objective, behavioural

measures, like personnel data and other ratings. For logistical and ethical reasons, we did not include such measures: organizing a large-scale intervention 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 intervention may be overestimated (De Haan, Duckworth, Birch, & Jones, 2013), reflecting some desire of individual participants to offer validation to the people who administered the program and/or some desire to rationalize the time and effort they themselves put into the program (Baumeister & Alghamdi, 2015).

Future research

Research on workplace resilience interventions is a relative new area of research (Robertson et al., 2015). This study extends the existing knowledge base that resilience interventions are effective in the workplace (Vanhove et al., 2016). However, more research is needed, especially randomized control trials using objective and/or behavioural measures to measure positive adaptation over time. Based on the results of this study, we propose two specific areas of research.

The first area of research worth exploring, is research on the role resources play in adapting to specific workplace stressors. An important decision that has to be made in the design of resource-based resilience interventions (research), is on the selection of resources. In an ideal situation, such a selection should be based on a proper needs assessment and a review of the literature (Barthelomew, Eldredge, Markham, Ruiter, Fernández, Kok, & Parcel, 2016). However, the literature on resilience interventions gives little clues as to which resources are enhanced best (Robertson et al., 2015) and under what stressful circumstances (Vanhove et al., 2016). In this study, we found the strongest effects on goal-related resources:

hope, self-efficacy and purpose in life, which may imply that such resources are important during organizational change. A better understanding is needed, on the role specific resilience resources play in adapting to specific workplace stressors (Baumeister & Alghamdi, 2015).

The second area of research worth exploring, is research on the role of common factors in the effectiveness of resilience coaching. Common 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, the strength of the coaching relationship. 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 why resilience coaching interventions are effective.

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Table 1. Overview of the eight resilience resources and the three indicators of positive adaptation that are targeted in the resilience intervention under study.

Resilience resource	**Definition**
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), for example a partner, family, friends and colleagues.
Indicator of positive adaptation	
Task performance	'The proficiency (i.e., competency) with which one performs central job tasks'(Koopmans, Bernaards, Hildebrandt, Schaufeli, De Vet, & Van der Beek, 2011, p. 858).
General health	The extent to which symptoms that associated with mental illnesses are absent in a person (Goldberg, 1972).
Recovery	'The ability to bounce back or recover from stress'(Smith, Dalen, Wiggins, Tooley, Christopher, & Bernard, 2008, p. 194).

Table 2. Overview of the structure and objectives of the workplace resilience intervention 'ResilienceWise'

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

Table 3. Reliability coefficients (Cronbach's alpha) of the outcome variables for the full intervention group, the unfinished intervention group and control group at three time points*.

	Full intervention group (n = 91)			**Unfinished intervention group (n = 67)**			**Control group (n = 140)**		
	α T0	**α T1**	**α T2**	**α T0**	**α T1**	**α T2**	**α T0**	**α T1**	**α T2**
Resilience resources									
Hope	.84	.87	.87	.88	.89	.85	.85	.84	.88
Optimism	.70	.74	.75	.62	.63	.77	.73	.72	.77
Self-efficacy	.60	.78	.81	.80	.86	.85	.81	.82	.88
Environmental mastery	.84	.77	.83	.80	.88	.82	.84	.82	.84
Purpose in life	.75	.80	.84	.83	.86	.87	.84	.80	.84
Positive affect	.85	.91	.92	.86	.92	.93	.84	.85	.89
Mindfulness	.86	.89	.87	.89	.91	.91	.85	.84	.88
Positive relationships	.83	.85	.86	.77	.82	.82	.78	.80	.85
Positive adaptation									
Task performance	.80	.85	.85	.85	.85	.89	.88	.88	.89
Recovery	.86	.86	.79	.82	.87	.85	.86	.82	.85
General health	.88	.81	.85	.81	.92	.89	.88	.82	.86

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

Table 4. Characteristics of the full intervention group, the unfinished intervention group and the control group

	Full intervention group (n = 91)		**Unfinished intervention group (n=67)**		**Control group (n = 140)**	
	M (SD)	%	M (SD)	%	M (SD)	%
Age	41.86 (10.46)		40.45 (10.48)		41.25 (8.71)	
Women		69.2**		59.7		49.3
Living with partner		71.4		68.7*		81.4
Higher educated		39.6**		34.4***		61.4
Permanent employed		81.3*		83.6*		90.7
Manager		13.2		6.0		7.9
Years in function	4.76 (3.66)		4.68 (4.34)		5.84 (5.99)	
Years in organization	14.10 (9.92)		11.42 (9.76)		12.36 (9.21)	

* significant difference compared to control group; $p < .05$
** significant difference compared to control group; $p < .01$
*** significant difference compared to control group; $p < .001$

Table 5. Means and standard deviations of the dependent variables for the intervention and control group at three time points.

	Full intervention group (n = 91)						**Unfinished intervention group (n = 67)**						**Control group (n = 140)**					
	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	4.53	0.75	4.70	0.69	4.63	0.61	4.54	0.64	4.61	0.64	4.57	0.70
Optimism	4.44	0.66	4.53	0.67	4.47	0.72	4.55	0.57	4.53	0.59	4.44	0.67	4.45	0.69	4.47	0.64	4.39	0.71
Self-efficacy	4.42	0.52	4.70	0.55	4.71	0.57	4.54	0.66	4.60	0.71	4.55	0.64	4.59	0.61	4.62	0.58	4.57	0.64
Environmental mastery	4.68	0.72	4.86	0.62	4.85	0.68	4.68	0.64	4.73	0.71	4.75	0.67	4.73	0.75	4.75	0.69	4.72	0.72
Purpose in life	4.32	0.74	4.73	0.66	4.66	0.73	4.37	0.81	4.57	0.74	4.60	0.76	4.45	0.76	4.48	0.73	4.47	0.76
Positive affect	4.08	0.62	4.33	0.65	4.21	0.67	3.96	0.64	4.13	0.69	4.02	0.79	4.01	0.62	4.06	0.61	3.86	0.74
Mindfulness	4.54	0.64	4.71	0.67	4.72	0.61	4.58	0.71	4.74	0.75	4.70	0.78	4.75	0.65	4.79	0.58	4.74	0.66
Positive relationships	4.57	0.82	4.72	0.82	4.69	0.88	4.63	0.73	4.72	0.77	4.70	0.80	4.66	0.74	4.64	0.78	4.60	0.82
Positive adaptation																		
Task performance	3.88	0.42	3.95	0.42	3.94	0.42	3.84	0.54	3.92	0.46	3.83	0.53	3.93	0.50	3.91	0.51	3.81	0.50
Recovery	3.96	0.81	4.25	0.83	4.21	0.77	4.09	0.80	4.22	0.89	4.17	0.84	4.08	0.82	4.14	0.74	4.10	0.79
General health	3.11	0.46	3.28	0.37	3.28	0.40	3.16	0.37	3.26	0.49	3.21	0.45	3.14	0.46	3.18	0.37	3.12	0.42
Coaching relationship			5.85	0.75					5.53	0.82								

Table 6. Results of repeated measures ANOVA's for the dependent variables with between factor group (full intervention group; 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 full intervention) and between follow-up measurement versus pre-test measurement (to measure long-term effects of the full intervention).

	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 post-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				
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				
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

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

Table 7. Hierarchical regression analysis summary for coaching relationship predicting the effect of the full intervention 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**	**β**	**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***
					Coaching relationship	0.23	0.06	.31***	
Optimism pre-test	0.50	0.09	.49***	.24***	Optimism pre-test	0.48	0.09	.47***	.30***
					Coaching 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***
					Coaching 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***
					Coaching 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***
					Coaching 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***
					Coaching relationship	0.31	0.06	.36***	
Mindfulness pre-test	0.37	0.10	.35**	.12**	Mindfulness pre-test	0.36	0.10	.35**	.15**
					Coaching 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***
					Coaching 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***
					Coaching relationship	0.19	0.04	.34***	
Recovery pre-test	0.55	0.09	.53***	.28***	Recovery pre-test	0.52	0.09	.50***	.34***
					Coaching 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***
					Coaching relationship	0.15	0.05	.31**	

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

Figure 1. Flow of participants in the intervention group and control group through each stage of the quasi-experiment, including response and drop-out rates

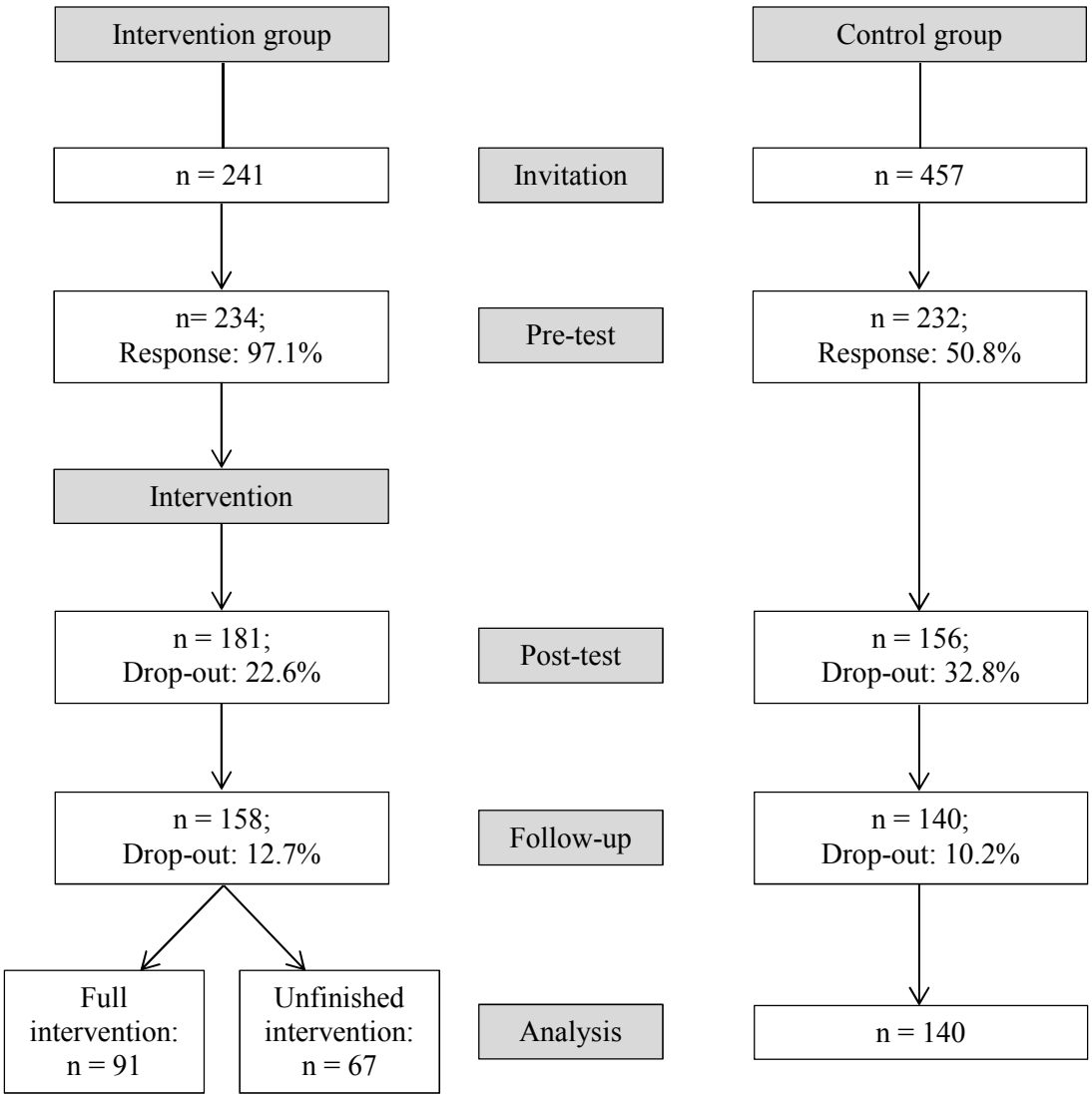

Figure 2. Mean scores on hope, self-efficacy, purpose in life, and on positive affect for groups across time

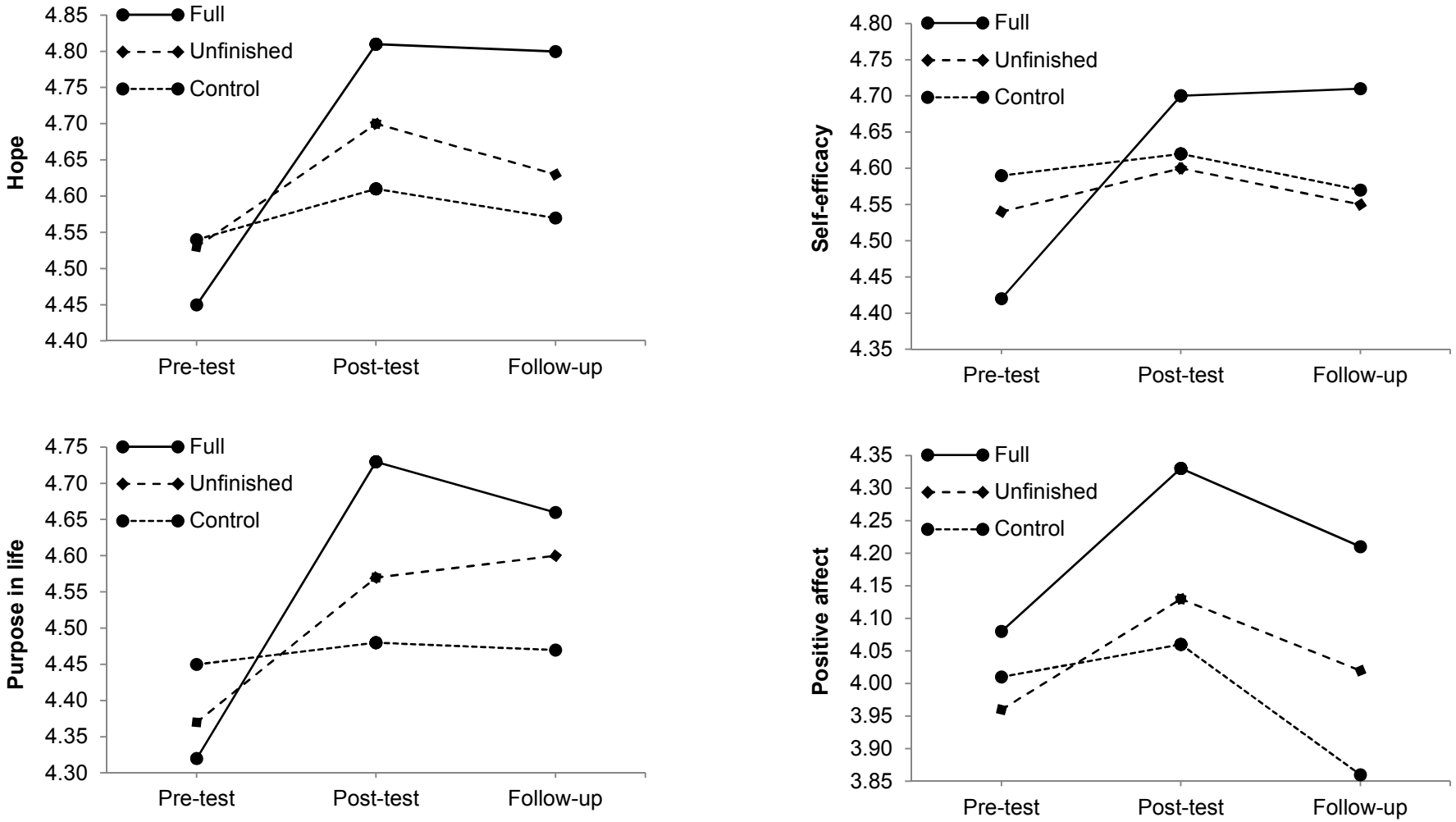

Figure 3. Mean scores on task performance for groups across time