

Replication

Walk it off! The effectiveness of walk and talk coaching in nature for individuals with burnout- and stress-related complaints

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ABSTRACT

Mental health problems are considered to represent the most frequent noncommunicable diseases in modern times. A growing field is now investigating the implementation of nature exposure in mental health care interventions. The present study investigated a walk and talk coaching program of approximately 12–18 weeks, in which coach and client go outside in a natural setting. Forty participants (31 females) with burnout- and stress-related complaints entered the study, half of them followed the walk and talk program and the other half were in the (passive) control group. Stress and burnout related symptoms and health and wellbeing were measured at baseline, mid-term, and post-intervention. Evaluative questions were added to measure participants' experiences with the program as well as their experiences with the natural setting. Results show that participants in the walk and talk group improved more on burnout, stress symptoms, general mental health, and wellbeing than those in the control group. These improvements were most pronounced at the post-intervention measurement, but some effects were already visible at mid-term. Participants also evaluated the program positively. The majority of participants indicated to have experienced added benefits of the natural setting.

1. Introduction

With the prevalence of burnout and stress-related mental illnesses continuing to rise, mental healthcare is increasingly exploring new interventions beyond pharmaceutical and cognitive behavioral treatment. Awareness is increasing that the physical environment can aid in the prevention, treatment and rehabilitation of mental health issues, and that specifically exposure to natural environments can have many added benefits (Bragg & Atkins, 2016). Therapy and coaching sessions therefore no longer only take place within the four walls of a caregiver's practice, but are also taken outdoors, into nature. Natural environments can mitigate the detrimental effects of stress on mental health (Hartig, Mitchell, de Vries, & Frumkin, 2014; Van den Berg, Maas, Verheij, & Groenewegen, 2010). Exposure to natural environments has pronounced benefits for healthy individuals, but even more so for those suffering from mental health issues (Beute & de Kort, 2018; Ottosson & Grahn, 2008; Roe & Aspinall, 2011).

A growing field is now focusing on implementing nature exposure in mental healthcare interventions. These interventions come in many shapes and forms, ranging from lifestyle interventions in which the natural environment merely forms a supporting, restorative background

for coaching and physical activity, such as green exercise (Gladwell, Brown, Wood, Sandercock, & Barton, 2013) and group outdoor health walks (Irvine, Marselle, Melrose, & Warber, 2020), to therapeutic interventions in which the natural environment is actively used as a therapeutic agent, such as wilderness therapy (Ferneer, Mesel, Andersen, & Gabrielsen, 2019; Russell, 2001) and horticultural therapy (Corazon, Nyed, Sidenius, Poulsen, & Stigsdotter, 2018; Sempik, Aldridge, & Becker, 2003). Within the latter approach, coaches and therapists often use the therapeutic effects of nature in combination with techniques from traditional mental health interventions, such as Cognitive Behavioral Therapy. These techniques may include journaling, role-playing, relaxation exercises, and mental distractions.

The importance of nature for mental health is increasingly recognized in mainstream healthcare. This is, for example, illustrated by the fact that doctors in Scotland now can officially prescribe time in nature to people with mental health problems (McHale, Pearsons, Neubeck, & Hanson, 2020). In the USA and Canada, Park Prescription or 'Park Rx' programs that aim to encourage physicians to prescribe physical activity in park settings to their patients are increasingly gaining popularity (O'Dell, 2016).

A rapidly emerging nature-based intervention is walk and talk

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coaching (Doucette, 2004; McKinney, 2011; Revell, 2017). In this type of intervention (also referred to as walk and talk therapy) coach and client go outside into nature for a walk and a talk session. Walk and talk coaching is not linked to any specific counselling or psychotherapy theory. The natural environment can be used in various ways. In some instances nature forms the basis for all therapeutic and counselling work with a client. In other instances, the natural environment serves mostly as a restorative outdoor setting for Cognitive Behavioral Therapy or other 'talking' interventions that traditionally take place indoors in an office-type setting (McKinney, 2011). In many walk and talk practices, the two functions of nature, therapeutic and restorative, are combined.

A recent meta-synthesis pointed at opportunities for both low and high intensity interactions with nature in outdoor counselling, with low intensity interactions being for instance just sitting and viewing nature, whereas high intensity interactions with nature include more invasive wilderness therapy sessions or using nature as a metaphor or using nature to stabilize mental health (Cooley, Jones, Kurtz, & Robertson, 2020). In addition, this meta-synthesis revealed that the added value of moving counselling sessions outdoors in nature was not recognized by all clients and practitioners.

Even though walk and talk coaching is widely practiced in many countries, this mental health intervention has thus far remained understudied, with the literature mostly being limited to descriptive, qualitative studies among clients and therapists (see Cooley et al., 2020, for a recent review). One early study examined the experiences of behaviourally challenged youth who participated in a 6-week walk and talk therapy program (Doucette, 2004). Findings suggest that the positive impact of therapy on feelings of self-efficacy and well-being was enhanced by being outdoors, and that the walking component allowed for physical release and aided problem-solving. Another more recent study among three adult clients revealed that the clients find walk and talk equally or more therapeutic than traditional therapy and consider walk and talk a less stigmatizing therapeutic alternative for individuals (Clark, 2019). When asked about their experiences with walking and talking, therapists report that walking side by side, with minimal eye contact, helps clients to open up (e.g., McKinney, 2011). They also think that nature based settings offer healing and restoration through a sense of freedom, space and openness (Revell & McLeod, 2016).

Outside the therapeutic setting, research has shown that nature exposure can improve mental wellbeing through exposure and access in the residential area (Alcock et al., 2015; Beyer et al., 2014; De Vries, Verheij, Groenewegen, & Spreeuwenberg, 2003; Krekel, Kolbe, & Wüstemann, 2016; Lederbogen et al., 2011; Van Dillen, De Vries, Groenewegen, & Spreeuwenberg, 2012), through visits to nearby nature (Coldwell & Evans, 2018; Lanki et al., 2017; Tyrväinen et al., 2014; White, Pahl, Ashbullby, Herbert, & Depledge, 2013), by interacting with nature such as through gardening (Van Den Berg & Custers, 2011) or forest bathing (Park, Tsunetsugu, Kasetani, Kagawa, & Miyazaki, 2010) and even by simply viewing natural environments (Laumann, Gärling, & McMahan & Estes, 2015; Van den Berg, Koole, & Van der Wulp, 2003). Nature can evoke pleasant (childhood) memories and communicate meaning in interactions that are often less complex than human-human communications and thereby aid recovery and rehabilitation even when there is no coach or therapist present (Ottooson & Grahn, 2008; Stigsdotter et al., 2011).

As an added benefit, being outdoors (in nature) goes hand in hand with exposure to daylight (Beute & de Kort, 2014) and daylight exposure has been related to improvements in mood for people with depression (Aan het Rot, Moskowitz, & Young, 2008; Wirz-Justice et al., 1996). Bright light therapy presents an alternative treatment to pharmacological interventions for both seasonal and non-seasonal depression (Al-Karawi & Jubair, 2016; Terman & Terman, 1999) and has been proposed as a potential therapy for burnout (Meesters & Waslander, 2010). Thus, while walking (and talking) in a natural environment, on top of the benefits from being in a natural environment clients can also mentally benefit from their exposure to natural (bright) light.

During walk and talk coaching, clients are engaging in walking as a moderate physical activity. Physical activity -as opposed to sedentary behaviour-has been found positively related to mental health on its own (Mammen & Faulkner, 2013; Rosenbaum, Tiedemann, & Ward, 2014; Schuch et al., 2017). The activity of walking has been theorized as a therapeutic mobility (Gatrell, 2013), that is easily undertaken and besides being physically active also enables social connection and connecting with the physical surrounding. Meta-analyses indicate that walking (in groups, indoors, or outdoors) results in less depressive symptoms (Hanson & Jones, 2015; Robertson, Robertson, Jepson, & Maxwell, 2012). More specifically, walking in a natural environment has also shown to be a restorative experience (Ettema & Smajic, 2015; Fuegen & Breitenbecher, 2018; Marselle, Irvine, & Warber, 2013; Olafsdottir et al., 2020; Ottooson & Grahn, 2008). Nature walks as part of a coping with depression program have proven to be effective, where restorative experiences during the nature walks fuelled at least the initial increase in mental wellbeing (Korpela, Stengård, & Jussila, 2016). Effects of walking in nature on mood and cortisol under real-life stress have been found to exceed the benefits of merely viewing nature or physical exercise alone (Olafsdottir et al., 2020). Other studies corroborate that walking in nature produces better mood and wellbeing outcomes than walking in other environments (Bowler, Buyung-Ali, Knight, & Pullin, 2010; Mayer, Frantz, Bruehlman-Senecal, & Dolliver, 2009) and some studies even point at different outcomes for different types of natural environments (Marselle et al., 2013), and that benefits depend on for instance the presence of walking routes (Schipperijn, Bentsen, Troelsen, Toftager, & Stigsdotter, 2013).

Even though there is much circumstantial evidence that walk and talk coaching is an effective intervention, there is as yet no direct (quantitative) empirical support for this assumption. The present study aimed to fill this gap by conducting a quasi-experimental field study into the effectiveness of a walk and talk coaching program for employees with burnout and stress-related complaints. We hypothesized that walk and talk coaching, as compared to a passive control group, leads to a greater improvement in burnout-related problems, mental health, wellbeing, and physical health of the participants. A second aim of the study was to examine participants' experiences with the walk and talk program and the perceived contribution of the natural environment to the outcomes of the program.

2. Method

A mixed method approach was implemented, measuring the effectiveness of the walk and talk program for reducing burnout and stress-related complaints with a quasi-experimental design with a control group, and the experiences of the participants with the therapy and natural environment with open-ended and closed survey questions.

2.1. Participants

A total of 40 participants (31 females) took part in the study, with 20 participants in the walk and talk group (15 females) and 20 participants in the control group (16 females). Participants who registered for a walk and talk coaching program called 'discover your talent' were invited to participate in the study. The majority of participants in the control group (13 participants) had requested information about the walk and talk therapy, but decided to waive participation. A criterion for inclusion in the control group was that no other form of therapy or coaching should be attended during the study period. The remaining seven participants were recruited using a snowball technique. Participants signed up for the study by returning a filled out informed consent form.

2.2. The walk and talk program

The walk and talk coaching trajectory 'discover your talent' consists of four individually guided walks of 1.5 h at the country estate

'Amelisweerd' in the Netherlands, supplemented with individual assignments. The program lasts between 12 and 18 weeks (1 walk per 3–4 weeks), depending on the schedules of the coach and client. The program follows a stepwise approach with a positive outlook. It starts with experiencing the beneficial effects of walking in nature, followed by the identification and discovery of aspects in one's work and life that bring inspiration and joy. In the next steps, the client is encouraged to discover his or her talents, and to develop concrete plans to use these talents and put them into action. The nature estate serves both as a natural background for the program and as a metaphor and source of inspiration for discussing problems and challenges. For example, the coach may point at a tree that has fallen on the path and ask what the client would do if she or he would encounter such a situation in his or her life. Or use changes that come with the season, such as falling leaves, as a starting point for discussing how the client copes with the passing of time and getting older. Alternatively, the coach may ask the client to breathe in the air of the forest as a relaxation exercise, or to take the position of a blue heron by standing on one leg – a more physical exercise that uses the benefits of balance for mental health.

During the period of the study, each participant was coached by one of three different coaches, to ensure generalizability of the results beyond the specific approach of individual coaches. The coaches had a background in clinical psychology, and were certified according to the national Dutch standards. They did not follow any specific training for nature-based coaching, because such a training was non-existent at the time they started pioneering walk and talk coaching. Coaches developed their expertise through hands-on experience and by following a variety of courses and master classes in complementary areas including mindfulness, character strength, provocative and solution-based training. At the time of the study, all three coaches were involved as teachers in a training program for new walk and talk coaches and thereby can be qualified as experts in their field.

2.3. Procedure

Clients who signed up for the program were invited to take part in the study by their coach who sent them a letter with information about the study. Potential clients who contacted the coaching bureau for information, but decided not to take part, were invited in a similar way. Participants filled out an online questionnaire before the first walk (at baseline), after the second walk (after approximately 8–10 weeks), and after the therapy (after approximately 14–18 weeks). They accessed the questionnaire via a link in an email sent to them by the researcher. Throughout the whole trajectory, the coaches kept in touch with the researcher about progress of the sessions, so that the researcher could send the link at the right time. Participants in the experimental group received a €100,00 discount on the coaching sessions and participants in the control group received a shopping voucher for €50,00.

2.4. Measures

2.4.1. Effectiveness of walk and talk coaching

To measure the effectiveness of the walk and talk coaching in comparison to the control group the following variables were measured at each of the three times of measurement (baseline, mid-term, post-intervention). The set of variables included both negative indicators of symptoms and problems and positive indicators of health and well-being.

2.5. Measures of burnout related symptoms

Burnout. The emotional exhaustion and distance scales of the Utrechts Burnout Scale (UBOS) (Schaufeli & van Dierendonck, 2000) were used to measure burnout. Both scales consist of 5 items. The response scale ranged from 1 (never) to 7 (always). The total burnout score was calculated as the average of all ten items. Reliability of the

scale was good (Cronbach's alpha = .85, averaged over the 3 measurements).

Bore-out. The Dutch Boredom Scale (Reijseger et al., 2013) measures boredom at work and consists of 6 items. The response scale ranged from 1 (never) to 7 (always) and the bore-out was calculated as the average of all 6 items. Reliability of the scale was good (Cronbach's alpha = .91, averaged over the 3 measurements).

2.6. Measures of mental health

Mental health problems. The Dutch version of the four dimensional symptom questionnaire (Terluin, 1996; Terluin, Rhenen, Schaufeli, & De Haan, 2004) was included to measure mental health. The scale measures four dimensions; distress (16 items), somatisation (16 items), depression (6 items), and anxiety (12 items). Participants are asked to indicate how often they have experienced each symptom during the last week on a response scale ranging from 1 (no) to 5 (very often or constantly). Reliability (Cronbach's alpha) averaged across the three measurements was good for all four subscales (distress: 0.92; somatisation: 0.87; depression: 0.92; anxiety: 0.81) as well as the total scale (0.89). The average total score was used as a measure of mental health problems.

Problems with concentration and social functioning. Two subscales from the Dutch questionnaire 'functioning when exhausted' (Gennip, Quirijnen, & Langerak-Visser, 2005) were added to measure concentration and attention (14 items) and social functioning (3 items, after deleting one item 'I can't bring myself to face a confrontation when I am in a conflict' due to a low Cronbach's alpha), both measured on a response scale ranging from 1 (not applicable at all) to 7 (very applicable). Reliability of the concentration and attention scale was good (Cronbach's alpha = .90 for the three measurements), and also good for the social functioning scale after deletion of one item (Cronbach's alpha = .88).

2.7. Measures of well-being

Pleasure at work. A single item question measured pleasure at work: "How much do you enjoy your work?" With the following addition for those who were unemployed at the time of the study: "If you do not work at the moment, think about the activities which you normally do during the day." The response scale for this question ranged from 1 (do not enjoy it at all) to 5 (enjoy it to a high degree).

Work engagement. The positive counterpart of burnout is engagement with work (Schaufeli & Bakker, 2010), which was measured with the Utrecht Work Engagement Scale (Schaufeli & Van Rhenen, 2006). Two dimensions were measured; vitality and dedication, with 5 items each. The response scale ranged from 1 (never) to 7 (always). The total engagement score was calculated as the average of all 10 items. Reliability of the scale was good (Cronbach's alpha = .92, averaged over the 3 measurements).

State hope. The Adult State Hope Scale (Snyder et al., 1996) consists of six items and measures hope as agency (3 items) and hope as pathway (3 items). The response scale ranged from 1 (not applicable) to 7 (very applicable). The average total score of the scale was used in the data analysis, with an average Cronbach's alpha across the three measurements of 0.86.

State self-esteem. Self-esteem was measured with the State Self-Esteem Scale (Heatherton & Polivy, 1991). Two subscales of this scale were used in the present research: performance (7 items) and social (7 items). The third subscale, appearance self-esteem, was left out of the questionnaire. The response scale ranged from 1 (not applicable) to 7 (very applicable). The scores from the two subscales were taken together in one total score, with higher scores reflecting higher self-esteem. The average Cronbach's alpha was good, 0.90.

Mindfulness. The short (14 item) Freiburg Mindfulness Inventory (Walach, Buchheld, Buttenmüller, Kleinknecht, & Schmidt, 2006) was

included to measure wellbeing. Participants were asked to indicate whether the items were applicable for the past week, on a response scale ranging from 1 (seldom or never) to 5 (almost always). The average Cronbach's alpha was .86.

Satisfaction with life. The Cantril ladder (Cantril, 1965) measures satisfaction with life on a ladder ranging from 1 (worst possible life) to 9 (best possible life).

2.8. Measures of physical health

Subjective Health. A single-item question from the SF-36 scale (Ware & Sherbourne, 1992) was included to measure subjective health. This question: "At this moment, how would you say your health is?" was measured on a response scale ranging from 1 (bad) to 5 (excellent).

Physical activity. Participants were asked to indicate, for the past week, how many days they had engaged in cycling, DIY activities, gardening, sport and/or other physical activity for at least half an hour. The Dutch norm is that people should engage in (mild) physical activity for half an hour or more on at least 5 days per week.

2.8.1. Evaluation of walk and talk coaching

At mid-term and post-intervention participants were asked several questions about their experiences with the walk and talk coaching and the contribution of the natural environment to the program.

Positive and negative changes. At the mid-term and post-intervention measurements, participants in the walk and talk group and control group were presented with a list of 18 possible positive changes in their life since the last time they filled out the questionnaire. The list of changes was developed together with the participating coaching bureau in relation to both the desired and observed effects of the discover your talent program. Sample items are: "More self-esteem" and "higher satisfaction with life". (see Fig. 3 for a full list of items). Negative changes could be reported by means of an open-ended question.

Mid-term-evaluation. At mid-term participants in the walk and talk group were asked to indicate whether nature had added benefits for the therapy. They were asked to indicate this on a scale with the options "no added benefits", "little benefits", "major benefits", and "don't know/no opinion". Participants who indicated that nature had little or major added benefits for the therapy were also asked to indicate in which way the natural environment added these benefits. Eight response categories were provided: "nature offers rest and relaxation", "outdoor air is good", "nature gives a feeling of spaciousness and freedom", "the natural environment is activating", "nature changes your view on reality", "in nature, you're better able to think and formulate sharper", "other".

Post-intervention evaluation. At post-intervention participants in the walk and talk group were asked to evaluate the program through three questions. First, they were by means of an open-ended question asked to give a brief description of their experiences with the program. Second, they were asked to score the program on a scale of 1 (very bad) to 9 (excellent). Third, they were asked to estimate the relative contribution (expressed as percentages) of five components to the success of the walk and talk coaching: relation coach-client, professionalism/expertise of coach, motivation and commitment of client, carrying out assignments, and walking in a natural environment.

2.9. Data analysis

The effectiveness of the intervention was tested by looking at the mid-term and post-intervention scores controlled for the baseline score. This was done by performing a repeated measures ANOVA with time (mid-term, post-intervention) as within subjects factor, treatment (walk and talk versus control group) as between subjects factor, and baseline scores as covariate. Planned contrasts were later on conducted to test for differences for group (walk and talk group versus control group) at mid-term and post-intervention separately, and for differences within groups of the two post-measurements versus baseline. Responses to the

questions about the evaluation of the walk and talk coaching were analysed with descriptive statistics and qualitative content analysis.

3. Results

The experimental and control group were similar in terms of gender, age, and marital status composition. There were, however, some differences in educational and income level, with somewhat higher levels for the experimental group. See Table 1 for an overview.

Despite the inclusion criteria being that participants in the control group should not undertake other coaching during the period of the study, three participants indicated to have started other types of courses (two at the first online questionnaire, and one at the last questionnaire). Because all three cases were considered as self-help courses, these three participants were kept in the dataset.

3.1. Effectiveness of walk and talk coaching

The experimental and control group were similar at baseline, with no significant differences for any of the dependent variables, except a marginal difference ($p = .085$) for physical activity which was higher in the control group. As shown in Table 2, baseline scores were significantly associated with each subsequent measurement, indicating the importance of adjusting for baseline measurements.

Treatment turned significant for seven of the thirteen outcomes, namely for burnout, mental health problems, concentration, work pleasure, self-esteem, mindfulness, and satisfaction with life (Table 2). The interaction of Treatment * Time turned significant only for work engagement, with a steeper increase in work engagement in time for the walk and talk group.

Table 3 displays the means and standard errors for all measurements, along with the outcomes of the planned contrasts. Significant differences between the groups are graphically illustrated in Figs. 1 and 2. At mid-term, the walk and talk group already showed less mental health problems than the control group. At post-intervention, burnout, mental health problems, concentration problems, work pleasure, self-esteem, and mindfulness scores were more improved in the walk and talk group than in the control group.

When looking at the development of scores over time within the two groups separately, the walk and talk group showed improvements over time for ten of the thirteen outcomes (burnout, bore-out, distress, concentration problems, social functioning, work pleasure, work engagement, hope, self-esteem, mindfulness). All ten outcomes were better at post-intervention than at baseline, and seven of these outcomes already showed improvements at mid-term (burnout, distress, concentration problems, work pleasure, hope, self-esteem, and mindfulness). The control group only showed an improved in hope at mid-term. This effect was, however, already diminished at post-intervention.

Table 1

Descriptive statistics for the experimental and control group.

		Walk and talk group	Control group
Gender	Female	15	16
	Male	5	4
Age	Mean (SD)	42.05 (1.85)	44.00 (2.55)
	Educational level		
	Academic	3	0
	Higher education	17	15
	Vocational School	0	5
Income	Low	5	10
	Middle class	12	8
	High	3	0
	No answer	0	2
Marital status	Single	5	5
	Married/living together	15	15

Table 2
Statistics of the repeated measures analyses for the symptoms and problems.

	Baseline (covariate)		Treatment		Time		Treatment * Time	
	F	η_p^2	F	η_p^2	F	η_p^2	F	η_p^2
Burnout								
Burnout	29.35***	.44	4.42*	.11	2.23	.06	.64	.06
Bore-out	52.81***	.59	.27	.01	1.96	.05	.03	.001
Mental health								
Mental health problems	18.17***	.33	6.65*	.15	1.33	.04	.06	.002
Concentration problems	22.27***	.38	4.74*	.11	1.37	.04	1.90	.05
Social problems	25.51***	.41	1.53	.04	.68	.02	1.65	.04
Wellbeing								
Work pleasure	18.55***	.33	4.34*	.11	1.06	.03	.74	.02
Work engagement	40.90***	.53	1.07	.03	2.20	.06	4.89*	.12
Hope	10.94**	.23	1.15	.03	.06	.001	3.11	.08
Self-esteem	44.42***	.55	6.14*	.14	2.15	.06	2.85	.07
Mindfulness	33.87***	.48	5.95*	.14	2.00	.05	3.14	.08
Satisfaction with life	16.41***	.31	4.26*	.10	1.08	.03	.48	.03
Physical health								
Subjective health	44.75***	.55	2.90	.07	.15	.004	.06	.001
Physical activity	25.01***	.40	.25	.01	2.10	.05	.26	.01

*p < .05, **p < .01, ***p < .001.

Table 3
Means and standard errors for all outcome variables.

	Walk and talk group			Control group		
	Time 1 (pre)	Time 2 (post1)	Time 3 (post2)	Time 1 (pre)	Time 2 (post1)	Time 3 (post2)
	Mean (SE)	Mean (SE)	Mean (SE)	Mean (SE)	Mean (SE)	Mean (SE)
Burnout						
Burnout	3.76 (.24) ¹	3.10 (.23) ¹	2.65 (.18) ^{a,1}	3.43 (.21)	3.18 (.23)	3.04 (.18) ^a
Bore-out	2.45 (.29) ²	2.17 (.25)	1.96 (.16) ²	2.42 (.32)	2.24 (.34)	2.08 (.24)
Mental health						
Mental health problems	2.33 (.19) ³	1.71 (.13) ^{b,3}	1.55 (.10) ^{c,3}	2.12 (.14)	1.93 (.14) ^b	1.85 (.15) ^c
Concentration problems	2.90 (.27) ⁴	2.31 (.21) ⁴	1.99 (.19) ^{d,4}	2.88 (.23)	2.64 (.21)	2.61 (.24) ^d
Social problems	3.13 (.37) ⁵	2.74 (.33)	2.25 (.30) ⁵	3.33 (.30)	3.06 (.34)	2.96 (.31)
Wellbeing						
Work pleasure	2.80 (.20) ⁶	3.50 (.22) ⁶	3.85 (.22) ^{e,6}	2.85 (.23)	3.25 (.22)	3.30 (.18) ^e
Work engagement	3.38 (.24) ⁷	3.70 (.26)	4.29 (.27) ⁷	3.70 (.24)	4.01 (.23)	3.95 (.21)
Hope	2.95 (.22) ⁸	3.58 (.25) ⁸	4.28 (.34) ⁸	3.01 (.23) ⁹	3.63 (.28) ⁹	3.58 (.32)
Self-esteem	3.96 (.23) ⁹	4.77 (.20) ⁹	5.03 (.29) ^{f,9}	4.46 (.21)	4.74 (.21)	4.71 (.21) ^f
Mindfulness	2.79 (.17) ¹⁰	3.16 (.17) ¹⁰	3.34 (.15) ^{g,10}	2.95 (.10)	3.07 (.11)	2.98 (.09) ^g
Satisfaction with life	5.95 (.33)	6.40 (.33)	6.65 (.33)	6.65 (.26)	6.20 (.39)	6.00 (.44)
Physical health						
Subjective health	3.00 (.16)	3.20 (.20)	3.20 (.17)	3.00 (.15)	2.90 (.18)	2.95 (.18)
Physical activity	3.60 (.43)	3.90 (.43)	3.90 (.40)	4.85 (.56)	4.75 (.46)	4.70 (.51)

Note: values in bold with the same letter are significant differences between the two groups at that post-measurement, values in bold with the same number are differences within one group compared to the baseline measurement.

3.2. Evaluation of walk and talk coaching

Participants in the walk and talk group reported more positive changes, $M = 5.4$ out of 18 options, $SD = 2.69$, at the two post-measurements than participants in the control group, $M = 2.55$, $SD = 2.28$, $F(1,38) = 13.09$, $p = .001$, $\eta_p^2 = 0.26$. No differences between the two measurements were found, $F(1,38) = 1.01$, $p = .32$, nor did the interaction of Treatment * Time turn significant, $F(1,38) = 0.04$, $p = .84$. Fig. 3 gives an overview of the positive changes reported. The majority of items were reported more often in the walk and talk group than in the control group. Chi-square tests for the individual items showed that “more aware of the now”, “more gentleness and acceptance”, “more plans for the future”, and “happier/less sad”, were reported significantly more often by the walk and talk group. “Sleep better”, “less physical complaints”, and “more regularity and structure” were reported more often by the control group. However, none of these latter differences reached significance.

In both the walk and talk group and the control group about 40% of the participants indicated that they had noticed one or more negative changes. There were thus no significant differences between the two groups in the number of negative changes reported spontaneously ($p >$

.50). The negative changes, as described, did differ between the walk and talk group and the control group. In the walk and talk group, mostly mentioned changes that were related to the raised awareness process instigated by the walk and talk coaching, whereas the negative changes that were expressed in the control group were mostly related to a further deterioration of their personal or work situation. None of the negative changes reported was related to the natural environment.

At mid-term, participants in the walk and talk group were asked to reflect on the added value of the natural environment to walk and talk coaching. A majority of participants (65%) reported that the natural environment had had a large added value to the coaching, whereas 25% reported that it had had a small added value. Some participants, 10%, did not know whether the natural environment had had an added value, or did not have an opinion. None of the participants indicated that the natural environment did not have an added value. The 18 participants who indicated that nature had a large or small added value to the coaching were further asked to indicate on a list of 8 items which contributions they had experienced from the natural environment. Most participants valued the relaxation offered by nature, the sense of space and freedom, and being outside in fresh air. See Fig. 4 for an overview of

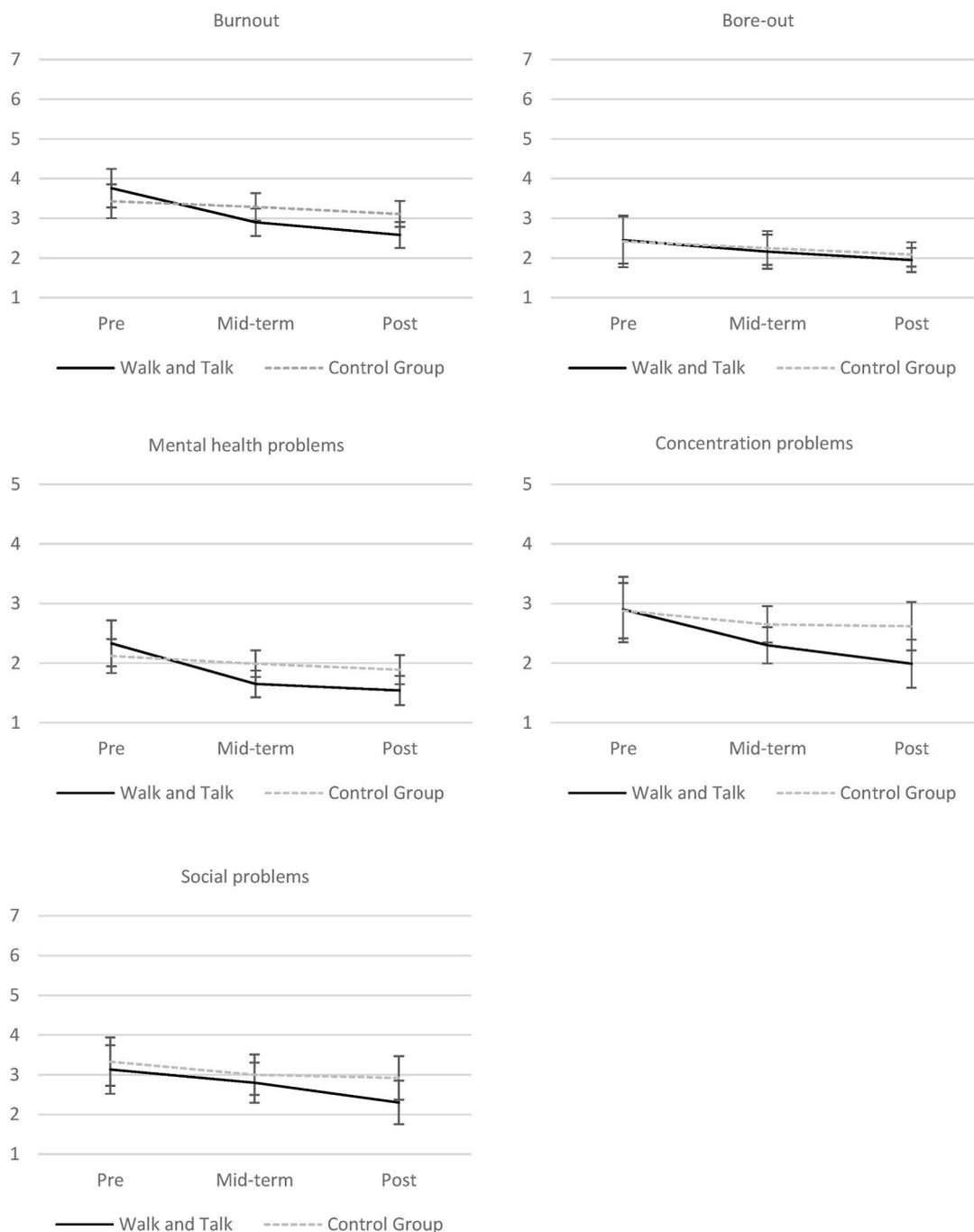


Fig. 1. Graphic representation of differences in symptoms and problems outcomes between the walk and talk group and control group, with 95% confidence intervals. Values for the mid-term and post-intervention measurements are corrected for baseline scores.

the contributions that were checked by the participants. Three participants crossed “something else” and mentioned the absence of traffic, providing a mirror to reflect on yourself, or being away from other people. At post-intervention, participants in the walk and talk group were also asked to reflect on the walk and talk coaching. Comments were generally positive, and predominantly related to gaining a better self-insight and becoming more optimistic about the future. About a third of the participants of the walk and talk coaching program mentioned nature in their comments. These comments related to the relaxing properties of nature, e.g.: “The environment was relaxing and magnificent” or: “Nature brings quiet, it brings things in perspective, and inspires”. The inspiring character of nature was also mentioned by another participant:

“The natural element is a big catalyst during the walks. It creates a safe, neutral environment. It inspires, brings you closer to yourself.” The participants graded the coaching program on average with a 7.8/10, $SD = 0.6$. A total of 6 participants gave the program a 7 (‘good’, 30%), 12 participants graded the program with an 8 (‘very good’, 60%), and 2 participants gave a 9 (excellent, 10%).

The participants in the walk and talk group were asked to estimate the percentage contribution of five factors to the success of the program, with the total adding up to 100%. As shown in Fig. 5 participants estimated the five factors to contribute about equally to the success of the program. The factor estimated most important was the motivation and effort of the client (23%), while 18% of the success was attributed to walking in nature.

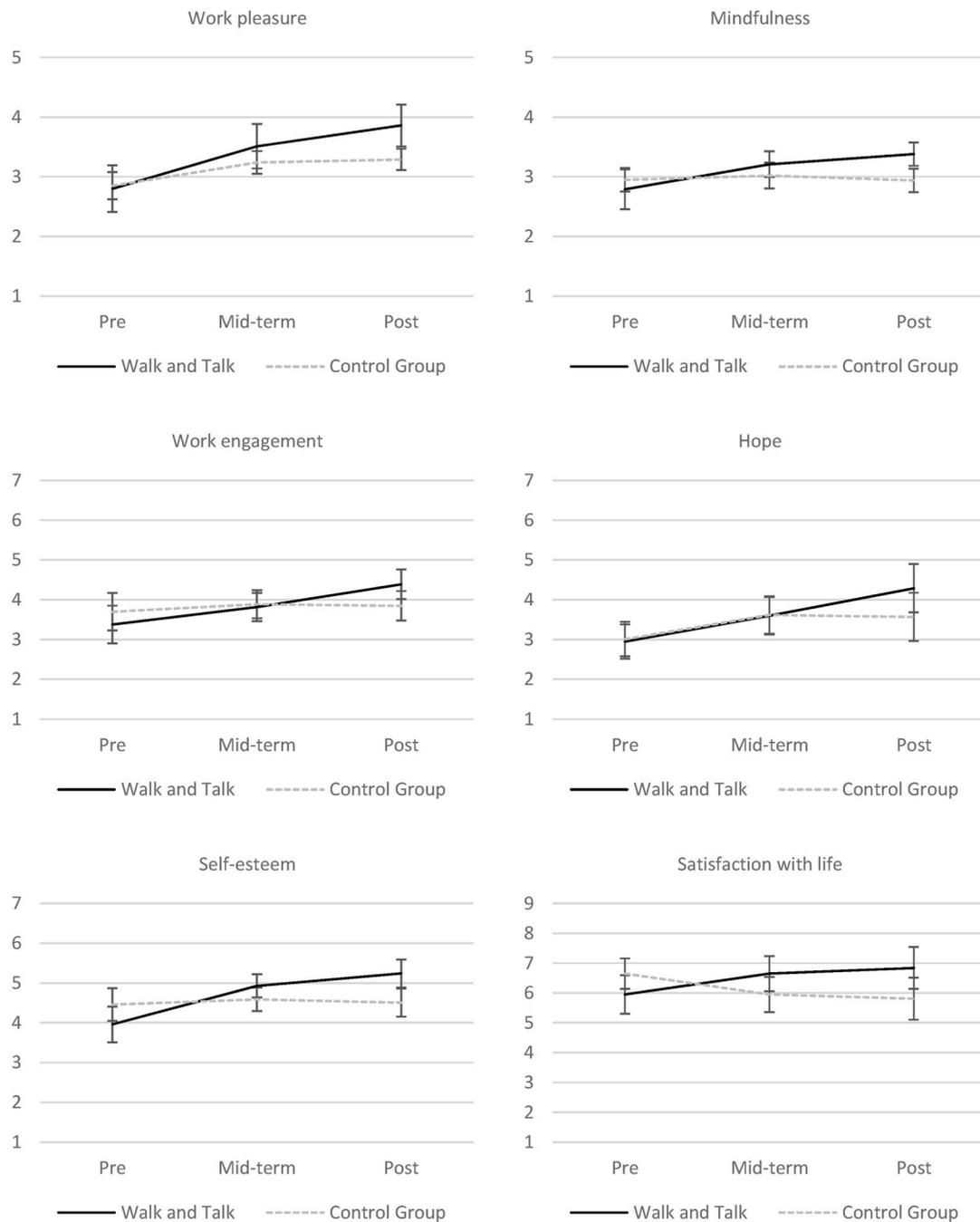


Fig. 2. Graphic representation of differences in health and wellbeing outcomes between the walk and talk group and the control group, with 95% confidence intervals. Values for the mid-term and post-intervention measurements are corrected for baseline scores.

4. Discussion

In this study, we aimed to test the effectiveness of walk and talk coaching in a natural setting for individuals suffering from work-related stress and burnout. The effectiveness of this coaching intervention on measures of symptoms and problems and health and wellbeing was compared to a control group that did not receive any therapy. The results indicate that both reductions in symptoms of burnout and other negative outcomes as well as increases in work pleasure and other positive outcomes were more pronounced for the group that received walk and talk coaching.

Improvement occurred with regards to job related variables such as burnout and work pleasure, but also on more general well-being outcomes such as mental health and self-esteem. The benefits were most

pronounced at post-intervention, after the walk and talk program was finished, but some effects already appeared after at mid-term. In general, the results indicate that the added value for stressed employees (in comparison to receiving no coaching or trying to solve things yourself) lie especially in the realisation and subsequent prolongation of a wide range of positive changes in (work)stress and psychological wellbeing over a longer period of time. The fact that participants in the walk and talk group reported almost twice as many positive changes compared to those in the control group, corroborates these findings.

The walk and talk coaching resulted in improvements in terms of burnout, bore-out, mental health, concentration problems, social functioning, work pleasure, work engagement, hope, self-esteem, mindfulness, and satisfaction with life. No improvements, however, were found for subjective health and physical activity. Thus, even though

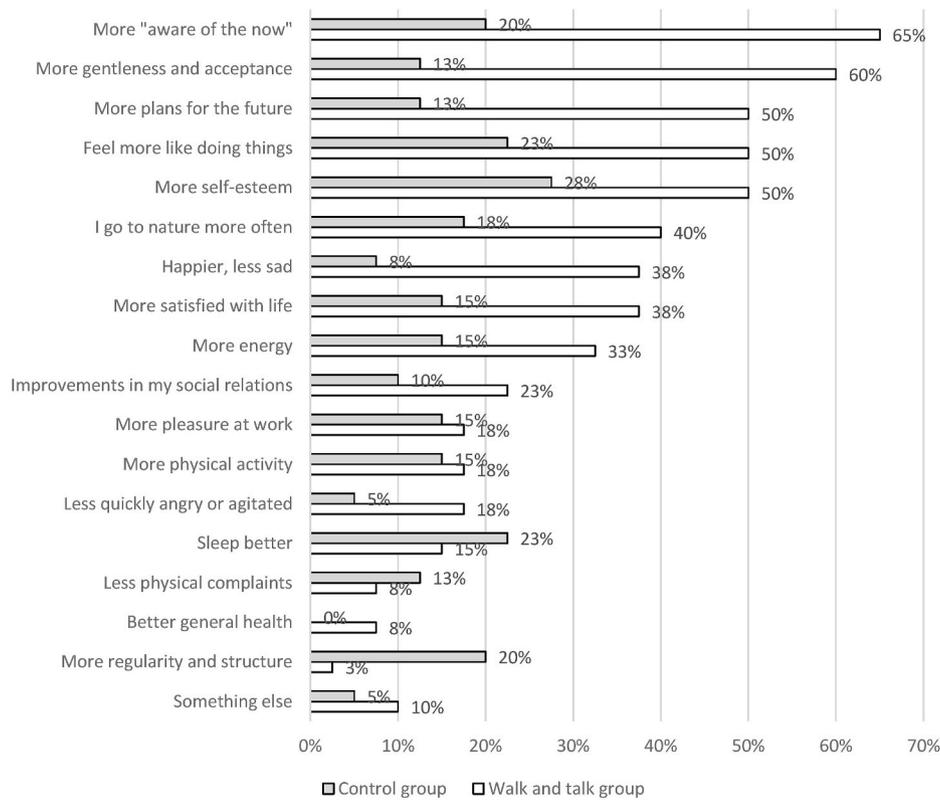


Fig. 3. Percentages of positive changes reported in the walk and talk and control groups, averaged across the mid-term and post-intervention measurements.

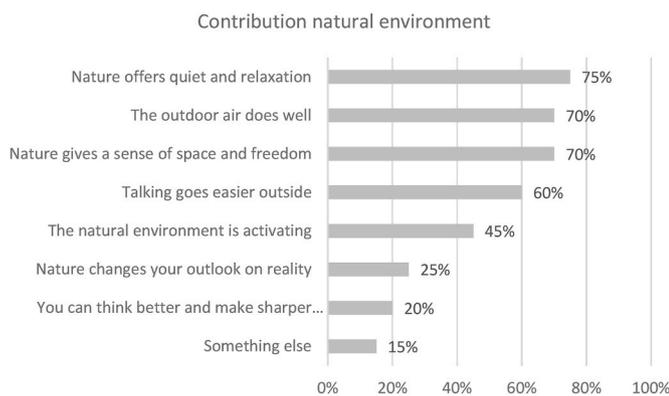


Fig. 4. Perceived contributions of the natural environment, in percentages that the separate items were crossed by the participants in the walk and talk group.

participants generally reported better work-related attitudes and mental wellbeing, this improvement did not directly reflect in a better experienced physical health. A possible explanation could be that participants did not experience (sufficient) physical complaints from their stress and burnout complaints to reflect in the recovery. This may not be a likely explanation as the mean score on the subjective health scale at baseline was around the midpoint of the scale, and therefore open to improvement. Alternatively, improvement in physical health as a consequence of better mental health may take a longer time to recover and may not yet have become apparent directly after the intervention.

The walk and talk coaching did not increase physical activity. This is in line with the fact that being physically active or increasing physical activity is not an aim of the 'discover your talent' program. The frequency of walk and talk sessions (once every 3 or 4 weeks) also seems to be insufficient for increasing physical activity levels. Nevertheless, even though it is not central to the program, increased physical could be a



Fig. 5. Estimated contribution of active factors for the success of the walk and talk coaching.

beneficial 'side effect' of the intervention. In fact, in the literature part of the effectiveness of walk and talk coaching is attributed to getting more physically active (Revell, 2017). At baseline, the participants in the walk and talk group indicated to engage in moderate-to-intensive physical activity on an average of 3.6 days per week, where the Dutch norm recommends at least 5 days per week. The participants in the control group scored marginally better with an average of 4.85 days, which is close to the norm. There was thus room for improvement in the experimental group, but this was clearly not realized.

An important element of the walk and talk coaching is exposure to, and therapeutic use of, natural environments. As the control group

consisted of people receiving no therapy, it is as yet unclear to what extent the beneficial effects were due to natural environment or to other elements of the program, such as the coaching, the assignments, and the physical activity. Further research in which a walk and talk group is compared to a similar coaching in a built (outdoor or indoor) setting might shed more light on this issue. However, since walk and talk coaching is closely intertwined with the natural environment, the ‘talk’ part cannot be just taken out of the coaching and applied to another type of ‘walk’ environment. In general, it seems very difficult to vary the environment without varying the coaching. As a result, differences between walk and talk coaching in a natural and non-natural setting cannot be uniquely attributed to the environment, differences in the style and content of the coaching may also have an influence.

Alternatively, future research could establish effectiveness by comparing walk and talk coaching to a standard intervention like Cognitive Behavioral Therapy. Such studies could be conducted as non-inferiority trials, in which the aim is to prove that walk and talk coaching is comparable in effectiveness to the standard intervention. Non-inferiority trials are not so common in psychological research but medical studies sometimes use them to show that a newer, simpler, or cheaper medicine or treatment performs no worse than the ‘gold standard’ in the field.

Other limitations of the research pertain to a non-randomized allocation to the study conditions. Therefore, it cannot be ruled out that (part of) the effects are due to self-selection. However, the risk of self-selection seems minimal given that participants in the control group mostly opted out for financial reasons, and not for lack of motivation. Furthermore, the current results rely entirely on self-report by the participants. To rule out that effects may be due to for instance social desirability, it would be advised to enhance future research with objective measures such as physiological or neuroendocrine measures, or by looking at behavioral consequences (such as absenteeism).

Even though no direct conclusions can be drawn about the contribution of the natural environment to the efficacy of the walk and talk coaching, the results indicate that most participants appreciated the natural environment and also attributed added value to it. The estimated contribution of walking in nature fell into approximately the same magnitude as other important contributing factors including individual motivation and the professionalism and expertise of the coach. This suggests that the natural environment is an important element of the program. When asked about their experiences with the walk and talk sessions, the participants often refer to the relaxing properties of nature. These findings are in line with the prevailing theories within restoration research (see, e.g., (Kaplan, 1995; Ulrich et al., 1991)). In addition, more recent conceptualisations of the mental health benefits of green space also incorporate stress relief as one of the central premises (see, e.g., (Bratman et al., 2019; Frumkin et al., 2017)).

Participants also referred to the natural environment as being inspiring and activating, which is in line with research reporting vitalizing effects of natural environments (Ryan et al., 2010; Takayama et al., 2014). It is important to note that the large majority of participants completed the program, and thus walked in the natural environments, in autumn and winter. Seasonal differences in weather and foliage type may influence the restorative effects of nature (Beute & de Kort, 2013; Pálsdóttir, Stigsdóttir, Persson, Thorpert, & Grahn, 2018; Windhorst & Williams, 2015). Future research needs to corroborate this, but potentially even more pronounced effects may be expected when the program would be conducted in spring or summer time. In addition, a further exploration of different nature types (e.g., a coastal area versus a forest) and natural circumstances (e.g., a rough river, a dead tree trunk bustling with insect life) could shed light on an optimal implementation of nature as a metaphor and therapeutic agent within the coaching program (Cooley et al., 2020).

Besides referring to nature, participants also made general comments about being outdoors, for instance ‘breathing in the fresh air’. Research on benefits of natural environments is increasingly recognizing the

importance of direct olfactory pathways leading from nature to physical and mental health (for instance by inhaling negative ions and through microbial pathways) (Buoli et al., 2018; Craig, Logan, & Prescott, 2016; Flandroy et al., 2018; Grafetstätter et al., 2017; Hägerhäll et al., 2018; Klompaker et al., 2019; Kuo, 2015; Rook, Bäckhed, Levin, McFall-Ngai, & McLean, 2017; Zock et al., 2018)). Other potential direct pathways are being exposed to daylight, which also has well-reported effects on vitality and mental health (see, e.g. (Aan het Rot et al., 2008; Partonen & Lönngqvist, 2000; Wirz-Justice et al., 1996)).

To conclude, the present research provides first quasi-experimental evidence for the effectiveness of walk and talk coaching. The results suggest a promising potential for walk and talk coaching in a natural environment for the relief from burnout and stress-related problems, with special emphasis on the relaxing and contemplative properties of natural environments. These results were found during the autumn and winter season, and may be even more pronounced in seasons with more sunshine and more green foliage. This adds yet another potential of nature for the improvement of mental health to the already diverse palette of restorative benefits of nature.

Author statement

A.vd.B. developed the idea and design of the study and was involved as principal investigator in the empirical research. F.B. wrote the initial draft of the manuscript. Both authors discussed the text of the manuscript and results and contributed to the final manuscript.

Declaration of competing interest

None.

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