



Becoming Self-Compassionate Step by Step — a Field Study on the Effect of Long-Distance Walking on Self-Compassion in Hikers Traveling the Camino Francés

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Abstract

Objectives The present longitudinal field study investigated whether hiking the Camino Francés strengthened self-compassion and tested covered distance, hikers' motives, and walking alone vs. with other hikers as predictors of the increase.

Method In the prospective main study with 104 hikers, 67.3% female, $M = 36.3$ years ($SD = 14.2$), change was measured by the difference between the first measurement taken on the way and the second measurement at arrival. Additionally, 21 participants, 52.4% female, $M = 34.3$ years ($SD = 14$), were recruited upon arrival and reported their actual and their retrospectively rated self-compassion at the start of their tour. Two follow-ups were conducted after 3 weeks and 6 months. Participants completed the Self-Compassion Scale (SCS) along with measures for mood and life satisfaction.

Results An increase in self-compassion was observed with $d = 0.22$ ($p = 0.024$) in the prospective data, and $d = 0.56$ ($p = 0.018$) in the retrospective data, which persisted throughout the follow-ups. In the prospective study, self-compassion was a stronger predictor of mood across time than vice versa. The increase in self-compassion was stronger in participants who walked longer distances ($\beta = .25$) and underwent a critical life event ($\beta = .21$).

Conclusions The results suggest long-distance walking as a promising additional means to strengthen self-compassion that could be integrated into compassion training programs. Future research should replicate the observed change across settings and related constructs, determine its causes, and investigate the interdependence of walking and meditation practices in stimulating self-compassion.

Preregistration This study was not preregistered.

Keywords Self-compassion · Long-distance walking · Exercise · Measurement of change · Field study

In recent decades, research on the positive effects of mindfulness and self-compassion as well as in training programs and contemplative practices that support their cultivation has strongly increased in the behavioral sciences (Kabat-Zinn, 1990; López et al., 2018; Neff & Germer,

2013). Self-compassion is derived from the practice of loving-kindness and compassion for oneself and others (Pali: metta) that is rooted in millennia-old Buddhist psychology (Barnard & Curry, 2011; Neff & Germer, 2018). Loving-kindness is described as the intention and ability to give happiness, joy, and unconditional kindness to all sentient beings (Hofmann et al., 2011). Following this definition, Neff (2003a) characterized self-compassion as “being touched by and open to one’s own suffering, not avoiding or disconnecting from it, generating the desire to alleviate one’s suffering and to heal oneself with kindness” (p. 87).

According to Neff, (2003a, 2003b), three interacting core dimensions comprise self-compassion: (1) self-kindness versus self-judgment, (2) common humanity versus isolation, and (3) mindfulness versus over-identification, which

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all refer to how a person copes with personal failure, suffering, and painful experiences. Self-compassion development requires the implementation, combination, and mutual supplementation of all three dimensions (Neff, 2012). Self-kindness primarily refers to consciously interrupting the automatically running, pejorative self-criticism when making mistakes or when failing in some way. Instead of being tough and self-judgmental, self-kindness encompasses facing inadequacy in a benevolent, supportive, and accepting way. Common humanity regards suffering as a shared human experience and an integral part of the human condition with a developed sense of connectedness with others, knowing that they also face this same human condition, which in turn overshadows feelings of isolation. The mindfulness component means holding painful, negative thoughts and feelings in an open, accepting inner space of awareness and being able to tolerate these kinds of feelings instead of acting them out or suppressing them.

Currently, six intervention programs that were shown to be effective in randomized controlled trials (RCTs) specifically cultivate compassion (Kirby et al., 2017): Mindful Self-Compassion (MSC; Neff & Germer, 2013), Compassion Focused Therapy (CFT; Gilbert, 2009, 2014), Cultivating Emotional Balance (CEB; Kemeny et al., 2012), Cognitively-Based Compassion Training (CBCT; Pace et al., 2009, 2013), Compassion Cultivation Training (CCT; Goldin & Jazaieri, 2017; Jazaieri et al., 2013), and Loving-Kindness and Compassion Meditations (LKM, CM; e.g., Wallmark et al., 2013). All programs focus on developing a more compassionate self. The duration of these programs varies from 4 to 12 weeks. Regular training in mindfulness-based meditation techniques to improve awareness and concentration and a directive practice to cultivate empathy and compassion are essential elements of all six programs (Kemeny et al., 2012; Neff & Germer, 2013). Mindfulness can be seen as a precondition for developing self-compassion. Mindfulness necessitates becoming aware of one's suffering and to respond to it compassionately and appreciatively (Boellinghaus et al., 2014; Gilbert, 2009; Neff & Tirsch, 2013). Research has revealed that participants in mindfulness-based training programs also showed significant growth in self-compassion (e.g., Chiesa & Serretti, 2009; Felton et al., 2015; Shapiro et al., 2007).

In addition to meditation-based practices to cultivate self-compassion, the question arises whether alternative means for stimulating self-compassion exist that are more compatible with everyday activities in western societies but not yet been investigated. A common integral component of mindfulness-based programs is the practice of walking meditation (Kabat-Zinn, 1990). During this form of meditation, attention is focused on the bodily sensations that are evoked while walking. Being aware of the physical sensations of each step allows the practitioner to constantly

return to the present moment (Kabat-Zinn, 1990). Studies have shown that in addition to an increase in mindfulness, participation in walking meditation training resulted in a significant reduction in psychological stress symptoms and depression and an increase in positive affect and perceived quality of life (Gotink et al., 2016; Prakhinkit et al., 2014; Teut et al., 2013). Similar effects have been found in studies on the effects of physical endurance programs that had moderate intense walking as the focus activity, but meditation was not included (Dasilva et al., 2011; Ekkekakis et al., 2000; Focht, 2009). Like meditation, physical activity has positive effects on various aspects of cognitive functioning (e.g., de Sousa et al., 2019; Ratey & Loehr, 2011), and walking facilitates problem-solving and the generation of new ideas (Keinänen, 2016). Furthermore, research on backpacker traveling has shown that especially backpackers who traveled on foot reported an increase in the sense of common humanity, self-knowledge, and self-efficacy throughout their journey (O'Reilly, 2006). In conclusion, many studies have demonstrated the beneficial physiological as well as cognitive and emotional effects of short- and long-distance walking. To date, little empirical research has been conducted on the possibilities of cultivating self-compassion outside of the familiar and sometimes artificially framed course setting of training, for example, by long-distance walking in a natural environment. Demonstrating that walking is effective in stimulating self-compassion would be highly relevant because walking is the most natural and common physical activity, which is easily accessible to most people and therefore promising with a broad scope of applications, for example, in rehabilitation care settings.

The central objective of the current field study was to investigate whether walking the Camino Francés would strengthen self-compassion depending on the distance covered and while monitoring the participant's mood as a potential confounder. Furthermore, we investigated the extent that hikers' motives for hiking the Camino might have had a moderating effect on the change in self-compassion, and whether walking alone would be more beneficial than hiking with other hikers. Finally, we additionally explored whether a retrospective "then-test" on a second sample of participants surveyed upon arrival would detect a similar increase in self-compassion compared to the prospective pretest–posttest comparison.

Method

Participants

In the prospective study, a total of 241 hikers consisting of 67.6% female, aged 12 to 69 with $M = 36.8$ years ($SD = 14.3$), participated in the first survey. Of these, 108

(44.8%) participants completed the second survey upon arrival. The data of four participants were excluded because of unreliable traveling information. Data of 104 participants, with 67.3% female, and a mean age of $M=36.3$ years ($SD=14.2$), remained for the analyses.

An additional 24 participants, 50% female, aged 19 to 85 years with $M=38.6$ ($SD=17.9$) were recruited at arrival for the retrospective change measurement, of which two were excluded because they missed completing the retrospective then-test, and one participant was excluded because of unreliable traveling information. Data from 21 participants, 52.4% female with a mean age of 34.3 years ($SD=14.0$), remained for the analyses.

The first follow-up measurement took place after 3 weeks ($n=56$; 55.2% dropouts) with $n=10$ belonging to the retrospective sample. The second follow-up measurement after 6 months was completed by 47 participants (16.1% dropouts), all belonging to the prospective study. We found no difference in self-compassion between participants who dropped out and those who remained in the study (all t -tests $p>0.05$). Participants who dropped out at the first follow-up had significantly lower SWLS scores ($M=16.89$, $SD=8.49$ vs. $M=27.17$, $SD=5.37$) in the posttest, $t(94.29)=-7.34$, $p<0.001$. Participants belonged to 21 nations. Forty-four were from Germany (35.2%), followed by 23 hikers from Spain (18.4%), and nine participants came from the USA (7.2%).

Procedure

The design of the prospective study can be described as a one-group, pretest–posttest design with two follow-ups without a control group and long-distance walking as the intervention. Participants were recruited and first surveyed after having started walking at different spots between Astorga and Santiago de Compostela where almost all travelers by foot pass by. The posttest was conducted upon their arrival, mostly in Santiago de Compostela.

In addition, we recruited a sample of participants upon their arrival in Santiago de Compostela. These participants were instructed to perform a “then-test” (Meyer et al., 2013; Nieuwkerk et al., 2007) by reporting their self-compassion and additionally rated their self-compassion at the start of their tour retrospectively with both measurements in randomized order. All participants of both samples were invited to respond to a follow-up 3 weeks after arrival and a second follow-up 6 months after arrival. The participants were recruited personally by the first author. Potentially interested participants were informed during initial contact that the purpose of the study was to learn more about the effects of long-distance walking by employing different questionnaires. In addition, the procedure of the successive surveys was explained before participants gave their written consent.

Only hikers on foot were included in the study. All surveys were programmed with UNIPARK and performed online. The first survey was conducted on electronic tablets with a 9.7-inch screen provided by the first author. Participants could choose from an English, German, or Spanish version of the survey. The surveys started with collecting sociodemographic information, followed by questions about the journey. Participants then completed instruments to measure self-compassion, mood, and satisfaction with life. Participants who gave their consent to participate in successive surveys received an e-mail with the link to the second survey on the expected day of arrival which they had indicated in the first survey. Invitation to participate in the follow-ups was sent automatically after 3 weeks and then after 6 months.

Measures

Sociodemographic Information

Participants were asked to indicate their age, gender, and nationality.

Traveling Information

Participants gave information about the starting point and destination of their tour, the expected date of arrival, the intended length of their route in days and kilometers, the previous duration of traveling in days, the distance covered up to that point, and whether they traveled alone or accompanied by others. Additionally, participants rated their health status on a 5-point rating scale from *bad* to *very good*. Finally, participants rated six reasons for traveling the Camino Francés (religious, spiritual, cultural, athletic, crisis, major life event) on a 4-point rating scale ranging from *not at all* to *absolutely*. The two last items were highly intercorrelated ($r=0.56$, $p<0.001$). Thus, they were combined to measure experiencing a critical life event (Cronbach's $\alpha=0.71$).

Self-Compassion

Self-compassion was assessed with the Self-Compassion Scale (SCS, Neff, 2003b, 2016). The 26 items assess positive and negative expressions of the three core components of self-compassion (self-kindness vs. self-judgment, common humanity vs. isolation, mindfulness vs. over-identification). Participants responded on a 5-point Likert scale ranging from *almost never* to *almost always*. Example items on the six components of self-compassion are as follows: “I try to be understanding and patient towards aspects of my personality I don't like” (self-kindness), “I try to see my failings as part of the human condition” (common humanity), “When something painful happens I try to take a balanced

view of the situation” (mindfulness), “I’m disapproving and judgmental about my own flaws and inadequacies” (self-judgment), “When I fail at something that’s important to me, I tend to feel alone in my failure” (isolation), “When something upsets me I get carried away with my feelings” (over-identification). McDonald’s omega (ω) for the four prospective measurements was 0.89, 0.92, 0.94, and 0.92, respectively. Given the ratio of sample size and the number of items for the retrospective then-test, Cronbach’s α was computed instead ($\alpha=0.91$).

Mood

The current mood was measured with the six-item short version of the Multidimensional Mood Questionnaire (Wilhelm & Schoebi, 2007). The instrument measures the three basic dimensions of mood — Calmness (C), Valence (V), and Energetic Arousal (E) with two items each. The items were opened with the clause “At this moment I feel ...”. Participants responded on a 7-point rating scale ranging from *tired* vs. *awake* (E+), *content* vs. *discontent* (V-), *agitated* vs. *calm* (C+), *full of energy* vs. *without energy* (E-), *unwell* vs. *well* (V+), and *relaxed* vs. *tense* (C-). A total mean score was computed for every participant for the analyses. The higher the total mean score, the more a participant was in a positive, calm, and energetic mood. McDonald’s ω for the four prospective measurements were 0.67, 0.73, 0.82, and 0.89, respectively. For the then-test, Cronbach’s α was 0.78.

Life Satisfaction

General satisfaction with life was measured with the five items of the Satisfaction for Life Scale (SWLS; Diener et al., 1985). Participants responded on a 7-point Likert scale ranging from *strongly agree* to *strongly disagree*. McDonald’s ω for the four prospective measurements were 0.89, 0.94, 0.89, and 0.97, respectively. For the then-test, Cronbach’s α was 0.91.

Data Analyses

All statistical procedures were performed by SPSS (v. 25), JASP (v. 0.16.2.0), and AMOS (v. 25). McDonald’s ω was computed with the macro OMEGA (Hayes & Coutts, 2020) to estimate the reliability of the SCS scores and mood scores at each point of measurement in the prospective study. For the retrospective then-test, reliability was estimated by Cronbach’s α . The change in self-compassion was analyzed separately for the prospective and retrospective data by paired-samples *t*-tests. The difference between pretest and posttest SCS scores indicated the change in self-compassion. The covariation of self-compassion with mood across the

measurements t1 (pretest) and t2 (posttest) in the prospective data was analyzed by performing a cross-lagged panel analysis with covered distance as a covariate. The hypothesized predictors for the increase in self-compassion from t1 to t2 were covered distance, hiking alone vs. with others, and the motives for hiking. They were tested by sequential linear regression modeling along with gender, age, and mood as controls. No sequential regression modeling was performed on the retrospective data because of the small sample size.

Results

As presented in Table 1, participants traveled altogether for $M=17.5$ days ($SD=14.3$) with a period of $M=8.2$ days ($SD=4.0$) between the two measurements at t1 (pretest) and t2 (posttest). Overall, they hiked a mean distance of 416.3 km ($SD=292.6$) and covered $M=201.3$ km ($SD=84.5$) between the pretest and posttest. The high standard deviations indicate that overall traveling time and distance varied to a great extent among the hikers. Participants in the small retrospective then-test sample reported shorter overall traveling times and distances. Santiago de Compostela was the primary destination for most hikers (77.9%). About a third (34.6%) traveled on their own. In the retrospective sample, fewer participants hiked alone. Most participants (87.0%) described their health status as good or very good. Cultural and athletic reasons were the two most prominent motives for hiking the Camino Francés.

Changes in Self-Compassion and Satisfaction with Life

An overview of the reported self-compassion is presented in Table 2 and Fig. 1. In the prospective study, a significant increase in self-compassion was reported between the pretest (t1) and posttest (t2), $t(103)=2.29$, $p=0.024$, with a small-sized effect, Cohen’s $d=0.22$. Consistently, a significant increase was also reported by participants who judged their self-compassion retrospectively for the start of their tour, $t(20)=2.58$, $p=0.018$, representing a medium-sized effect, $d=0.56$. The retrospectively judged self-compassion was significantly lower compared to the pretest scores in the prospective study, $t(123)=2.43$, $p=0.015$. Participants’ self-compassion further increased across the two follow-ups but without reaching significance. A comparison of prospective data between pretest SCS scores and SCS scores 6 months after the end of the tour revealed a significant increase in self-compassion, $t(46)=2.61$, $p=0.012$, $d=0.38$.

As presented in Table 3, self-kindness showed the strongest increase in the prospective data, even after p was corrected for multiple testing. Self-judgment and mindfulness also increased significantly when tested one-tailed. The

Table 1 Descriptive statistics of traveling information for the two samples

	Prospective measurement of change (n = 104)	Retrospective measurement of change (n = 21)
n (%) destination Santiago de Compostela	81 (77.9)	16 (76.2)
Total distance (km): M (SD)	416.3 (292.6)	233 (155.2)
Total travel time (days): M (SD)	17.5 (14.3)	10.5 (6.7)
Δ distance (km): M (SD)	201.3 (84.5)	233 (155.2)
Δ travel time (days): M (SD)	8.2 (4.0)	10.5 (6.7)
n (%) traveling alone	36 (34.6%)	5 (23.8)
Health status: n (%) good or very good	87 (83.6)	20 (95.2)
Reason for traveling: M (SD)		
Religious	1.87 (1.01)	1.81 (0.87)
Spiritual	2.59 (1.03)	2.43 (0.93)
Cultural	2.71 (0.90)	2.90 (0.77)
Sportive	2.77 (0.92)	2.81 (1.08)
Life crisis	1.63 (0.86)	1.76 (1.00)
Major life event	2.38 (1.09)	2.29 (1.15)

Δ distance and Δ travel time refer to the difference between the pretest and posttest

Table 2 Mean self-compassion and satisfaction with life scores for four measurements and two samples applying different methods of change measurement

Method of change measurement	Point of measurement							
	Pretest (t1)		Posttest (t2)		Three weeks follow-up (t3)		Six months follow-up (t4)	
	M	SD	M	SD	M	SD	M	SD
Self-compassion								
Prospective	3.26	0.56	3.35	0.60	3.36	0.64	3.41	0.59
Retrospective (then-test)	2.93	0.62	3.19	0.52	3.31	0.56	-	-
Satisfaction with life								
Prospective	22.46	8.50	21.53	8.86	27.48	5.29	21.09	9.45
Retrospective (then-test)	23.24	9.01	21.71	9.47	22.80	9.40	-	-

Self-compassion scores ranged from 1 to 5. SWLS scores ranged from 7 to 35

Fig. 1 Mean self-compassion scores at t1 (pretest) and t2 (posttest) for prospective (n = 104) and retrospective (n = 21) measurement of change. Note. Error bars = 95% CI

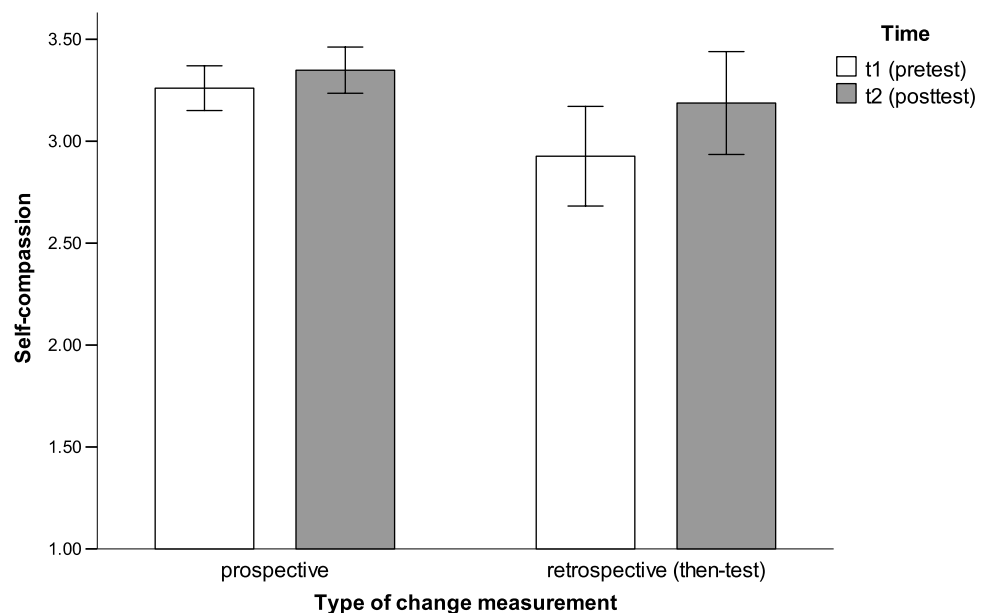


Table 3 Descriptive and inferential statistics for the pretest–posttest change in the six components of self-compassion by the two methods of change measurement

SC component	Prospective measurement of change (<i>n</i> = 104)							
	Pretest (t1)		Posttest (t2)		<i>t</i>	<i>p</i>	<i>d</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Self-kindness	3.18	0.77	3.34	0.82	2.654	0.009	0.260	
Self-judgment	2.88	0.76	2.77	0.69	−1.934	0.056	−0.190	
Common humanity	3.22	0.75	3.35	0.87	1.657	0.101	0.162	
Isolation	2.60	0.90	2.55	0.82	−0.638	0.525	−0.063	
Mindfulness	3.46	0.76	3.55	0.80	1.776	0.079	0.174	
Over-identification	2.82	0.80	2.83	0.77	0.274	0.785	0.027	
Total SC score	3.26	0.56	3.35	.60	2.285	0.024	0.224	

SC component	Retrospective measurement of change (<i>n</i> = 21)							
	Retrospective pretest		Posttest		<i>t</i>	<i>p</i>	<i>d</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Self-kindness	2.88	0.80	3.15	0.80	2.116	0.047	0.462	
Self-judgment	3.16	0.77	2.93	0.67	−1.592	0.127	0.347	
Common humanity	2.74	0.82	3.11	0.78	2.383	0.027	0.520	
Isolation	2.96	0.91	2.74	0.85	−2.070	0.052	0.452	
Mindfulness	3.24	0.92	3.55	0.61	2.007	0.058	0.438	
Over-identification	3.17	0.93	3.04	0.85	0.845	0.408	0.184	
Total SC score	2.93	0.62	3.19	0.52	2.583	0.018	0.564	

p values are two-tailed

effect sizes revealed that the negative counterparts of self-compassion, especially isolation and over-identification, decreased only to a very small extent. The results for the retrospective then-test were similar. Self-kindness and common humanity increased significantly. The increase in mindfulness and the decrease in isolation were very close to significance in two-tailed testing. Neither change was significant when corrected for multiple testing. Again, the effect sizes revealed that positive components of self-compassion changed stronger than their negative counterparts.

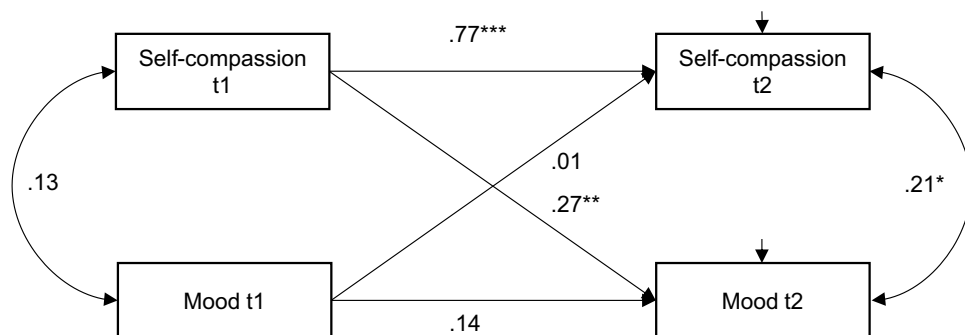
Satisfaction with life showed a different trend, as depicted in Table 2. In the prospective study, satisfaction with life marginally decreased from the pretest to the posttest, $t(101) = 1.86, p = 0.065, d = 0.19$. This trend was confirmed by the retrospective then-test, $t(21) = 1.92, p = 0.070, d = 0.42$. Participants reported higher SWLS scores in the

first follow-up, especially in the prospective sample. This result can be attributed to the selective attrition of participants with low SWLS scores from the posttest to the first follow-up (see above). For the remaining participants, paired *t*-tests resulted in $p > 0.05$. A comparison of the pretest and the second follow-up SWLS scores after 6 months revealed a nonsignificant decrease, $t(46) = 1.36, p = 0.180, d = 0.20$. Satisfaction with life showed only a weak to moderate covariation with self-compassion, ranging from $r = 0.06$ to $r = 0.48$.

Cross-Lagged Panel Analysis of Self-Compassion and Mood

The results of the cross-lagged panel analysis, which was conducted with the data of participants from only the

Fig. 2 Cross-lagged panel analysis of self-compassion and mood based on prospective measurement of change (*n* = 104). Note. t1 = pretest, t2 = posttest. Standardized coefficients are shown. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The critical ratio for the difference between the two cross-lagged regression weights was $z = 2.75$ with $p = 0.006$



prospective measurement, are presented in Fig. 2. Self-compassion showed high interindividual stability across the two measurements, but the mood of the participants was quite volatile, with $\beta=0.77$ vs. $\beta=0.14$, respectively. The cross-lagged coefficients indicate that self-compassion at t1 (pretest) predicted mood at t2 (posttest) more strongly than mood at t1 predicted self-compassion at t2. The difference between the two cross-lagged regression weights was significant, $z=2.75$, and $p=0.006$. Entering the covered distance as a covariate changed neither the size of the estimates nor their significance.

Predicting the Change in Self-Compassion

The results of the sequential regression modeling on the prospective data to predict the change in self-compassion are presented in Table 4. Participants who performed the retrospective then-test were not included in the analyses. The analysis started by entering age and gender as covariates in the model, which had no significant influence on change in self-compassion. In the next step, the mood at t2 was entered as a covariate. Then, the spatial distance covered was entered as the first predictor. Given that the temporal distance measured in days and the spatial distance measured in kilometers covaried substantively, $r=0.84$, $p<0.001$, we decided to concentrate on the spatial distance because we expected that it would be more psychologically salient and precise compared to the temporal distance. The spatial distance covered predicted an additional 8.2% of the variance of the change in self-compassion, $\beta=0.29$. Entering traveling alone vs. with other hikers had no significant influence on the change in self-compassion. In the final fifth step, experiencing a critical life event was the only significant predictor of the five measured motives, explaining an additional 3.4% of the variance in the change of self-compassion, with $\beta=0.21$. The model fit for the final model five was $R^2=0.13$, $F(6, 95)=2.35$, $p=0.037$.

Discussion

The central objective of the present longitudinal field study was to test whether long-distance walking could stimulate individuals to become more self-compassionate. In the main prospective study, change in self-compassion was determined by comparing self-reported self-compassion at two measurements during hiking, controlling for mood as a potential confounder. In addition, a small sample of participants performed a retrospective then-test. The persistence of a potential increase was tested by two follow-ups. A second research goal was to test whether the observed change in self-compassion depended on the covered distance, hiking alone vs. with other hikers, and the motives for hiking.

Overall, a small significant increase in self-compassion was observed in the prospective data for hikers on the Camino Francés. Likewise, a significant medium-sized increase was observed in the retrospective data. This convergence is consistent with the results of other studies measuring change with both methods simultaneously (e.g., Meyer et al., 2013). The observed increase persisted across the two follow-ups up to 6 months. The observed increment in self-compassion in the prospective measurements was small. However, the extent that self-compassion increased is still remarkable because of the high heterogeneity in the sample with participants from various countries and despite the many intervening factors occurring during long-distance walking in a natural, uncontrolled setting. Interestingly, we found no similar increase in participants' judgments about their general satisfaction with life, suggesting that long-distance walking might affect not all forms of self-directed cognitions.

A detailed analysis revealed that participants in the prospective study especially reported enhanced self-kindness and to some extent also a decrease in the counterpart self-judgment. Participants who performed the then-test

Table 4 Sequential linear regression analysis for the pretest–posttest change in self-compassion applied to the sample with prospective measurement of change

Predictor	Model 1		Model 2		Model 3		Model 4		Model 5	
	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>
Age	−0.003	0.981	0.004	0.973	0.020	0.846	0.018	0.859	0.060	0.560
Gender (0 = male, 1 = female)	−0.049	0.643	−0.045	0.667	0.011	0.911	0.013	0.904	0.009	0.929
Mood at t2			0.102	0.313	0.095	0.330	0.092	0.350	0.086	0.375
Δ distance (km)					0.291	0.004	0.284	0.006	0.250	0.015
In company (0 = no, 1 = yes)							−0.039	0.697	0.040	0.709
Critical life event									0.209	0.058
Increase R^2	0.002		0.010		0.082		0.001		0.034	
<i>p</i>	0.892		0.313		0.004		0.697		0.058	

$n=104$; the dependent variable in the analyses was the difference score in self-compassion (posttest – pretest)

additionally reported enhanced common humanity, mindfulness, and decreased isolation. Effect sizes revealed that positive components of self-compassion increased more strongly compared to their negative counterparts, which decreased in both samples. Such simultaneousness of change in some components and persistence in other components has been also observed in other studies (e.g., Dreisoerner et al., 2021). Learning to perceive one's distress in a new way might be easier and take less time than refraining from habitual negative thoughts and feelings. Maybe more change in these dimensions would have been observed if participants had hiked more than the reported 8.2 days on average and also if they had participated in any of the existing compassion cultivation programs, which typically last between 4 and 12 weeks (Kirby et al., 2017).

The cross-lagged panel analysis of the prospective data revealed substantial interindividual stability of self-compassion from t1 to t2, whereas mood appeared to be highly volatile. More importantly, self-compassion predicted mood across measurements, whereas mood did not predict self-compassion across time. This result enhances the confidence that the increase in self-compassion was not just an epiphenomenon of an emotional high caused by the physical effort of hiking. One potential causal pathway for the increase in self-compassion involves metacognition. According to the metacognitive processes model (Bernstein et al., 2015), three interrelated processes constitute metacognitive awareness: (1) becoming aware of the subjective experiences and processes currently occurring in consciousness; (2) disidentifying from these internal experiences, realizing that internal states are not identical with the self; and (3) reducing the reactivity to thought content. The repetitive activity of walking can be assumed to stimulate all three metacognitive processes and could therefore function as a safe framework for self-encounters. The continuously deepening capacity to anchor attention to the present moment (this step, this breath, this bodily sensation), triggered by the intense walking activity itself, might promote focused attention on the given moment in a non-judgmental way (Carmody, 2014; Kaufman et al., 2018). This state of mindfulness could serve as a basis for turning towards painful experiences (Pali: dukkha), including the notice of their transient nature (Pali: anicca). As a consequence, responding in a kind and compassionate way rather than reacting automatically by acting against the current experience becomes more likely (Neff & Tirsch, 2013). Instead of judging or wanting to change the suffering, the hiker might cultivate self-intimacy. The length of the walk, as well as the efforts that the walk entails, fosters a supportive new way of coping by simply attending and being in contact with the momentary experience. Providing evidence for these hypothesized cognitive processes remains a challenging task for future research. As

discussed in the limitations below, we offer other potential explanations for the observed increase in self-compassion during this period of long-distance walking.

The sequential regression analyses revealed that the observed increase in self-compassion in the prospective data was independent of gender, age, mood, or hiking alone vs. with other hikers but could be predicted by the covered distance and by experiencing a critical life event as a motive for hiking the Camino Francés. The effect of the covered distance can be interpreted as a response to the dosage that is coherent with the overall increase in self-compassion from the pretest to the posttest. The longer the time spent walking, the more cognitive change that could have occurred, and the stronger the increase in self-compassion. Among the five motives for hiking, only the experience of a critical life event predicted the increase in self-compassion, even though it was not the most important motive among the hikers. This result is in accordance with the classification of self-compassion as an alternative inner attitude that can be particularly helpful and supportive in dealing with painful life circumstances that are beyond control (Neff, 2003a). The result also confirms research showing that self-compassion is associated with coping in challenging situations (Hiraoka et al., 2015; Wren et al., 2012). A possible explanation is that a critical or stressful life event might stimulate a state of openness to experience, which in turn could strengthen self-compassion. The focus then might not be on changing the momentary experience but instead on the inner attitude that supports the self to be with the experience even if it does not change.

Limitations and Future Directions

Although the field study offers promising results, some limitations should be considered. The most important limitation is the lack of a control group in the study. Consequently, it cannot be ruled out that other factors than simply walking might have caused the increase in self-compassion. Such an alternative factor is exposure to nature. Research on forest bathing (Shinrin-Yoku) has shown that exposure to nature has beneficial effects on mental health outcomes, such as anxiety or depressive symptoms (Kotera et al., 2022). However, forest bathing often includes mindfulness meditation sequences and walking passages. The extent that the effects of forest bathing are purely due to being in nature is therefore questionable. Nevertheless, a restorative effect that might include the strengthening of self-compassion appears possible, given that many epidemiological studies have shown that urban green settings are associated with better physical and mental health (cf., Hartig, 2021; van den Bosch & Ode Sang, 2017).

A related alternative explanation for the increase in self-compassion is the transition from everyday life to a

somewhat adventurous hiking tour. A similar transition occurs during vacation. Research on recovery during and after vacations has shown that the positive effects typically vanish quite quickly after returning home (de Bloom et al., 2009, 2012; Nawijn, 2011). In contrast, the follow-ups in the present study revealed the persistence of the gained self-compassion for up to 6 months. This long persistence is also incompatible with the occurrence of a seasonal effect.

Another competing explanation for the increase in self-compassion is some naturally occurring growth. Unfortunately, research on self-compassion from a developmental perspective is very scarce. A 5- to 7-year longitudinal study across the lifespan revealed a cubic growth curve (Lee et al., 2021). At baseline age between 40 and 70, self-compassion increased slightly throughout the follow-up period, but remained stable among participants between 20 and 40 and decreased beyond 70 years of age. Applying this growth curve to the present study, 68.3% of the participants in the prospective sample belonged to an age group with high stability according to results in Lee et al. Furthermore, given that the mean period between the pretest and posttest was only 8.2 days, a growth process appears highly unlikely. It is also worth noting that self-compassion tends to not increase in waitlist control groups (e.g., Neff & Germer, 2013).

An alternative factor that likely contributed to the observed increase in self-compassion is the impact of implicit expectations or lay theories about change (e.g., Plaks et al., 2009). Walking a path is one of the most powerful symbols for change and development (e.g., life path, healing path, pilgrimage path, path towards enlightenment). Such a symbolic meaning of walking a long distance could have triggered an expectation for change that contributed to the observed increase in self-compassion in both samples. The occurrence of such an effect is supported by the fact that participants who experienced a critical life event showed a higher increase in self-compassion. Moreover, the Camino Francés is one of the most important Christian pilgrimage routes, which was designated a world heritage site by UNESCO. The observed increase in self-compassion could be unique to hiking the Camino because of its symbolic meaning. Interestingly, the data of the study revealed a mixture of motives to hike the Camino Francés rather than being dominated by religious or spiritual motives. None of these motives except experiencing a critical life event predicted the increase in self-compassion. Therefore, the individually assigned meaning of hiking the Camino could have been more relevant than the culturally ascribed meaning as a pilgrimage. Implicit expectations could also have been elicited by the research when being observed, as the Hawthorne effect suggests. At least, participants were not informed about the specific hypotheses as the research objective was communicated more generally to study the effects of long-distance walking. Finally, our surveys included no items that assessed activities participants

performed during hiking. Some participants could have meditated or read a book or engaged in some other activity that could have contributed to the increase in self-compassion.

A second study limitation is the attrition rate. Although the observed attrition rates between measurements were comparable to those of other studies (Gustavson et al., 2012), attrition could have biased the observed increase in self-compassion, especially if dropping out was more likely for participants with no increase in self-compassion. However, comparisons of dropouts with remaining participants revealed no significant difference in self-compassion across all measurements.

A third limitation was due to the way that the retrospective then-test was implemented, which was accompanied by some shortcomings. Therefore, the results of the retrospective sample are only tentative and should be viewed with caution. The sample size for the retrospective then-test was also very small, resulting in low statistical power and increased risk for false positive results. Furthermore, the SCS was originally not construed for retrospective judgments even though our data suggest no serious impairment of psychometric quality. The significantly lower mean of self-compassion at t1 in the retrospective judgments and the stronger increase in self-compassion in this sample could indicate a response shift bias in the prospective data, but at least two alternative explanations for these differences are more likely. First, the reference point for the retrospective judgment was more distant in time and space. Participants in the then-test were instructed to retrospectively judge their self-compassion at the start of their tour, whereas the participants in the prospective study were surveyed first after having started. This difference could have contributed to the stronger increase in self-compassion. Second, the instruction to refer to the start of the tour in the then-test could have led to a contrast effect because participants engaged predominantly in dissimilarity testing to form a judgment (e.g., Mussweiler et al., 2004). Although the observed differences in change in self-compassion obtained by both methods cannot be interpreted, both methods consistently detected an increase in self-compassion. As both methods have different sources of error, combining them in a multi-method approach and applying them to every participant are promising, especially in field studies.

Finally, the effect of the covered distance on the increase in self-compassion could have been caused by a self-selection bias. Participants who covered a longer distance could have differed in some way from participants who preferred to walk a shorter distance. Although such a self-selection bias could be ruled out for the other predictors in the regression models (e.g., gender or age) because their covariance with distance was partialled out, long- and short-distance walkers could still have differed in other characteristics not included in the study.

Notwithstanding these limitations, the field study presents tentative evidence that walking longer distances might be an alternative means to stimulate self-compassion. Our finding raises some interesting questions for future research. First, future research would benefit from the inclusion of a control group. Given the difficulty of establishing a single appropriate activity or setting, the effects of long-distance walking on self-compassion or related constructs need to be studied taking various activities and different settings into account. Therefore, future research could investigate whether hiking other routes that differ in symbolic load or type of environment similarly strengthen self-compassion. One promising type of activity for a control condition could be cycling. A relevant difference between cycling and walking is the focus of attention in the sense that walking promotes directing the attention more towards the self, stimulating self-awareness more than during cycling. Likewise, multi-day forest bathing retreats without any meditation or walking sequences could be integrated as a control group in which participants have a pure nature experience comparable to the Camino environment. If walking proves to be a means for strengthening self-compassion, future research should engage in revealing potential cognitive and physiological mediating processes, for example, by applying a mixed methods approach that combines questionnaires and interviews or by conducting momentary ambulant assessments to monitor the self-directedness of attention or measure the arousal during walking. Finally, future studies could also include related constructs, especially mindfulness to further validate the effects of long-distance walking.

In conclusion, existing programs that foster self-compassion could be enriched by incorporating walking as an additional significant component. From a practical perspective, practitioners might consider combining the potential factors discussed above and recommend engaging in long-distance walking in a natural setting and assigning meaning to the activity of walking to achieve the strongest increase in self-compassion. Additionally, adapted guided meditations could be applied to maximize the likelihood of becoming more self-compassionate step by step.

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Declarations

Ethics Statement The study was conducted according to the ethical principles established by the Declaration of Helsinki. The present study is a non-clinical observational study.

Informed Consent All participants provided written informed consent.

Conflict of Interest The authors declare no competing interests.

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