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A systematic review of volitional personality change research



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Personality traits predict a broad range of life outcomes, including relationship success, educational attainment, and health. As many people have the desire to change some aspects of their personality, volitional personality change (VPC) – self-directed trait changes in the direction of personal change goals – has recently gained increasing attention. This preregistered review aimed to provide an integrative overview of the emerging literature on VPC (<https://osf.io/ns79m>). Based on a systematic literature search on PsycINFO (October 1, 2024), we identified 30 empirical, longitudinal studies on VPC ($N = 7719$). We summarized the findings from these studies in a narrative integration and using meta-analytic tools and distinguished two research strands in the VPC literature: studies examining VPC without interventions and studies examining intervention-induced VPC. Simply having a goal to change one's personality was only weakly related to actual personality changes. However, VPC interventions were successful in promoting desired personality changes ($d = 0.22$, 95% CI = [0.005, 0.433], 7 studies, 26 effect sizes). These personality changes seemed to last or even increase during follow-up periods ($d = 0.37$, 95% CI = [0.140, 0.591], 4 studies, 17 effect sizes) and were associated with changes in other variables such as well-being. Although the available evidence on VPC is still limited, the initial results on VPC are promising. Future research is needed to draw definitive conclusions on the generalizability, mechanisms, and practical implications of VPC. The authors received no funding to conduct this review.

Personality traits – enduring patterns of thoughts, feelings, and behaviors – are powerful predictors of relevant outcomes across life domains^{1–8}. Traits such as neuroticism and conscientiousness have, for example, been linked to health behaviors, mental disorders, physical health problems, and mortality^{3,9,10}. Furthermore, personality traits predict relationship success, educational attainment, and well-being, with effect sizes comparable to those of other variables such as socio-economic status or cognitive abilities^{4,11}.

Given this consistent evidence for the predictive effects of personality traits on relevant life outcomes, the question arises whether personality traits can be actionable targets to promote the attainment of these outcomes. As personality traits are theorized to have lasting influences on health, relationships, work, and other life domains^{3,8,12–17}, they may be useful targets for interventions designed to improve people's quality of life across domains⁵. Moreover, many people are intrinsically motivated to change their personality^{18,19}, highlighting the possibility of volitional personality change (VPC) in the general population.

In this systematic review, we summarized and integrated the fairly young literature on VPC, defined as self-directed changes in personality traits that are consistent with a person's change goals^{20,21}. This new line of research is characterized by remarkable differences in the designs and

interventions used to foster personality change^{22,23}, rendering it difficult to draw clear conclusions about the efficacy and limitations of VPC interventions. A systematic integration of existing evidence is thus needed to assess whether VPC is possible, understand how interventions can facilitate VPC, and derive directions for future research on this topic. In the following, we first briefly summarize the relevance of personality trait changes and then turn to theoretical perspectives on VPC.

Traditionally, personality traits like agreeableness, conscientiousness, extraversion, neuroticism, and openness have been considered stable entities that do not change in adulthood^{24,25}. Over the past decades, however, it has become evident that personality traits possess both stable and malleable properties across the lifespan^{12,26}. This evidence raised the question of whether personality traits can be changed volitionally. VPC could help people to come closer to their ideal self, increase their self-satisfaction, and promote the attainment of desired life outcomes^{5,27–29}. This latter idea is supported by emerging evidence that not only the levels of personality traits but also changes in personality traits are linked to important outcomes across life domains. For example, Wright and Jackson³⁰ found that both levels of neuroticism as well as increases in neuroticism predicted a worse health status and unemployment several years later. Similarly, increases in

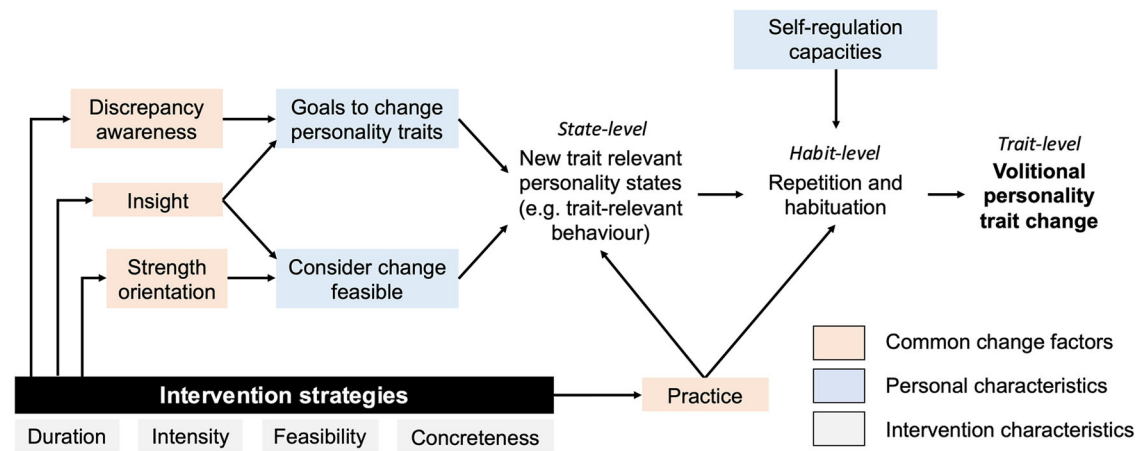


Fig. 1 | Integrative illustration of contemporary volitional personality change theories. This figure integrates three contemporary VPC theories^{20,21,35}. Orange boxes represent common change factors, blue boxes personal characteristics, and gray boxes intervention characteristics, respectively.

neuroticism and decreases in conscientiousness have been found to predict physical health problems and mortality^{31–33}. Although most studies did not investigate the causal effects of personality traits on these outcomes, the robustness of findings across samples and study designs led many researchers to conclude that facilitating desired personality changes could be a way to, either directly or indirectly, promote well-being, health, and work-related success in the general public^{3,5,34,35}.

However, it is also clear that achieving lasting personality trait changes is a challenging task, and initial evidence indicates that VPC might even result in unwanted personality changes²⁸. It is thus critically important to understand how and under which circumstances VPC is possible. Theories of VPC may provide initial insights into these questions.

At least three theoretical accounts offer ideas about the conditions, mechanisms, and moderators of VPC. First, the Theory of Self-Regulated Personality Change²⁰ specifies three conditions that need to be fulfilled for VPC to occur. The first condition is that people desire to change their personality traits or trait-related behavior such as being more conscientious or less neurotic. The second condition is that people consider personality trait change to be feasible and believe that they are able to change their personality traits. If these two conditions are fulfilled and people show changes in trait-relevant behaviors (e.g., act more reliable, orderly, and persistent), lasting changes in personality traits can occur if these behavioral changes become habitual and generalize across situations and life domains.

Second, the Model of Interventions to Change Personality Traits²¹ focuses on individual and intervention characteristics that moderate the success of a VPC intervention. Similar to the Theory of Self-Regulated Personality Change, a general motivation to change one's personality traits, self-regulation capabilities, and positive beliefs about personality change are considered important individual-level moderators for successful VPC. Furthermore, interventions aimed at facilitating VPC should be concrete, feasible, intensive, and persist a considerable amount of time. These participant and intervention characteristics are thought to influence personality traits via changes in personality states – momentary expressions of personality in a certain situation – and intervention adherence.

Third, integrating research from clinical and personality psychology³⁶, Allemand and Flückiger³⁵ proposed a Common Change Factor Model that comprises four change mechanisms that should be targeted in personality interventions: discrepancy awareness, insight, practice, and strengths-orientation. Discrepancy awareness describes the accentuation of differences between one's actual and desired self. Insight refers to the facilitation of reflective processes such as the clarification of one's motives, expectation, and beliefs. Practice describes the repeated expression of new behaviors that are in line with one's desired personality changes. Finally, strengths-orientation describes the activation of resources and strengths to facilitate lasting personality change. Together, these common change mechanisms

capture four general strategies of how a VPC intervention may lead to changes in personality traits.

In summary, to design successful VPC interventions, a thorough understanding of the conditions, mechanisms, and moderators of VPC is required. Existing VPC theories vary in their scope but together they may offer some insight into when and why VPC may be (un)successful (see Fig. 1 for an integrative illustration). However, to evaluate which of these theoretical claims are supported by empirical evidence and whether a refinement of VPC theories is required, an integrative overview of the VPC literature is necessary. Hence, the goal of this systematic review was to summarize and integrate the emerging VPC literature and discuss directions for future research.

Methods

This systematic review was preregistered on May 5, 2024 in line with the PRISMA-P checklist³⁷ at <https://osf.io/ns79m>. Supplemental materials such as coding instructions, extracted data, and an HTML document with all analysis code and findings can be retrieved from <https://osf.io/tw358/>. Deviations from the preregistration are described below and additionally in the supplemental material (Supplementary Table 1). As this review relied on published research data, it was exempt from ethical review at the University of Zurich.

Literature search strategy and inclusion criteria

We conducted a systematic literature search on PsycINFO on May 5, 2024 and updated the literature search on October 1, 2024 using the following search string: (“volitional” OR “self-regulated” OR “intentional”) AND (“personality trait change*” OR “personality trait development” OR “personality change*” OR “personality development”). We limited the search to peer-reviewed articles written in English. In total, 373 studies were identified in this literature search, which were then screened for eligibility. In addition, we screened the reference lists of two review articles on related topics^{21,38}. Finally, we conducted a forward search and a backward search for all eligible articles that were identified with the other two strategies. That is, we used Web of Science to identify further relevant studies by checking which studies cited the eligible studies and screened the reference lists of eligible studies (the latter being a deviation from the preregistration suggested by a reviewer).

Studies fulfilling the following criteria were included in the systematic review: (1) empirical, quantitative study with human subjects, (2) written in English, (3) longitudinal personality assessment, and (4) examination of VPC in line with the above presented definition. Additionally, if a study examined an intervention, the study had to have a prospective design (i.e., at least one personality assessment before and after assessment after the intervention). Applying these inclusion criteria, 30 studies were included in our review (Fig. 2).

Coding procedure

Coding for the review was done in a three-step procedure. In Step 1, we evaluated the eligibility of studies for inclusion based on titles and abstracts. In Step 2, we evaluated eligibility based on full texts. In Step 3, we extracted data from eligible articles such as sample characteristics (age information, percentage female, country of data collection), design characteristics (study duration, number of personality assessments, measures), intervention characteristics (components of the intervention, level of intervention, aspect targeted by the intervention), and effect size information (narrative summary of results, and, if provided, Mean and SD of personality traits before and after the intervention). For more details about the coding procedure, please see the coding instructions at <https://osf.io/tw358/>.

Coding was done by two independent coders with PhDs. Eligibility of 25% of studies was coded by both coders to assess interrater agreement. Furthermore, data extraction of all eligible studies was done by both coders

(deviation from the preregistration to increase reliability of the coding beyond the preregistered 25% double-coding). Interrater agreement was good regarding study inclusion (94% in Step 1 and 100% in Step 2) and data extraction (ranging from 91% for intervention characteristics to 98% for study design characteristics, with an overall average of 95%). Divergent codings were resolved through discussion. We did not include a risk of bias assessment in the individual studies.

Reporting summary

Further information on research design is available in the Nature Portfolio Reporting Summary linked to this article.

Results

Descriptive statistics and ShinyApp

This systematic review included 30 studies on VPC published between 2014 and 2024. These studies comprised 26 independent samples, which were mostly collected in the US ($k = 14$, 52%). Samples were either college students ($k = 16$, 62%) or convenience samples ($k = 10$, 38%), were on average relatively young ($M = 25.57$ years, $SD = 7.88$), and primarily consisted of female participants ($M = 67.69\%$, $SD = 11.27$). Regarding the study design, personality changes were examined over an average time interval of 31.77 weeks ($SD = 36.82$), with a mean of 7.35 personality assessments ($SD = 6.38$).

As we coded a broad range of information for a heterogenous collection of studies, we developed a ShinyApp to illustrate our findings: <https://life-event-research.shinyapps.io/VolitionalChange/>. This ShinyApp allows researchers to filter, sort, reduce, and expand the results of the review according to their interests and research focus. For example, the ShinyApp can be used to receive more details on the sample characteristics and results of studies with a similar design.

Generally, two research strands can be distinguished in the VPC literature. The first strand aims to address the question of whether having goals to change one's personality traits can explain actual personality changes without any interventions (see Fig. 3A for an illustration of a typical study design). In contrast, the second research strand examines whether interventions can facilitate VPC and help people to achieve personality changes in desired directions (see Fig. 3B for an illustration of a typical study design).

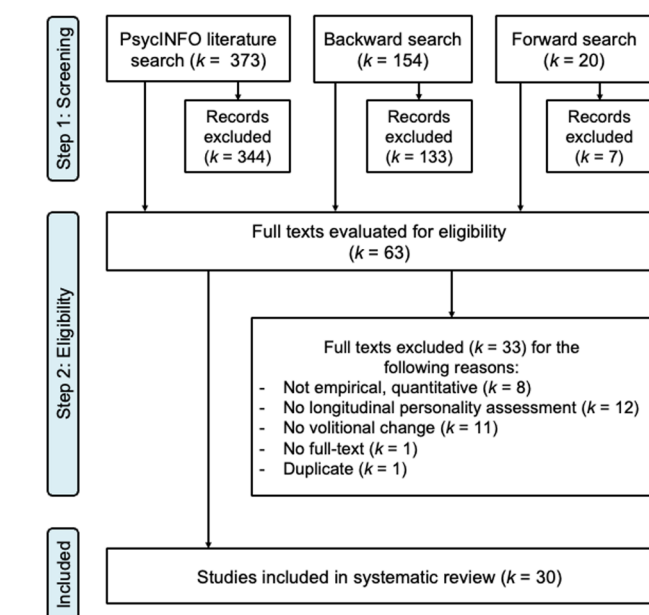
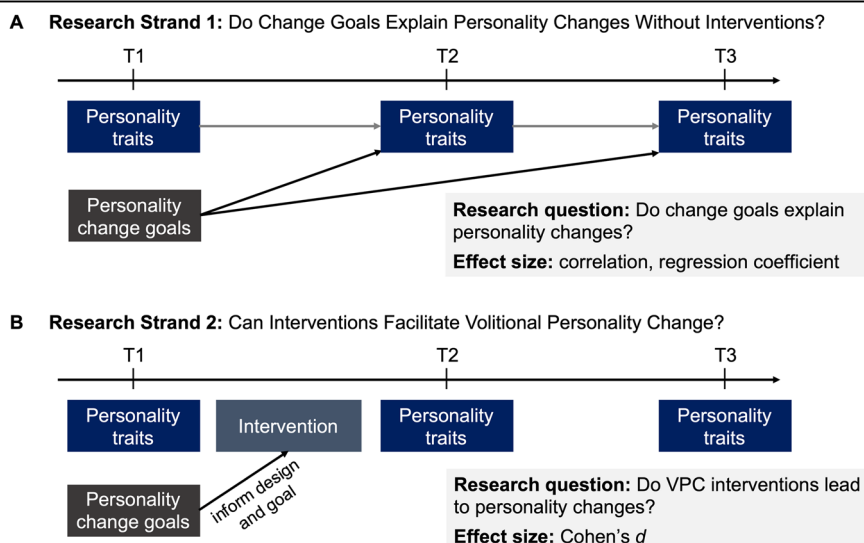


Fig. 2 | PRISMA-flowchart illustrating study inclusion. The flowchart illustrates our search procedure. As described in the results section, the 30 studies included in our systematic review addressed different research question and were partly based on overlapping samples.

Do change goals predict personality changes without interventions?

Study designs to examine volitional personality change without interventions. We identified 14 studies that examined whether change

Fig. 3 | Illustration of study designs of the two research strands in the literature on volitional personality change. Panel A illustrates the design of studies examining VPC without an intervention. Panel B illustrates the design of studies examining the effects of interventions aimed at facilitating personality trait changes. Research questions and typical effect size estimates are presented in gray boxes. VPC = volitional personality change.



goals can explain personality changes without interventions (Table 1). In these studies, participants typically rate their personality traits at multiple measurement occasions several months apart. In addition, participants report their personality change goals at the first measurement occasion (T1), for example, by responding to items such as “I want to be someone who is outgoing, sociable”³⁹. Then, it is examined whether participants’ change goals assessed at T1 can predict personality trait changes over time. The effect size of interest is a correlation or a regression coefficient capturing whether people with more pronounced change goals change more in the desired direction than people with less pronounced or no change goals (see Fig. 3A).

Findings on how change goals are related to volitional personality change. We summarized findings on VPC without interventions in a narrative review as studies differed in their way of quantifying these effects. To date, the most comprehensive evidence for the relationship between change goals and actual trait changes comes from a mega-analysis that integrated the results of 12 longitudinal samples ($N = 2238$)⁴⁰. This mega-analysis found that change goals predicted changes in all Big Five traits, suggesting that people who desired to change a certain personality trait actually did so when assessed 3 to 4 months later. These associations were strongest for extraversion and neuroticism and weakest for agreeableness and openness (see Fig. 4). Furthermore, as illustrated in Fig. 5, changes in personality traits over 3 months were about three-times stronger for people who wanted to change their personality traits ($d = 0.14$) compared to normative personality changes over the same time interval ($d = 0.04$). However, overall, the effect sizes for VPC without intervention were rather modest when evaluated based on common effect size guidelines⁴¹ and compared to effect sizes of intervention-induced personality changes¹³. Furthermore, it should be noted that the mega-analysis incorporated a few samples in which interventions were conducted and thus it does not provide a “pure” answer to the question of whether change goals can predict VPC without interventions²⁸.

When considering other studies that examined the possibility of VPC without intervention, the findings were more mixed. Several studies found that change goals only predicted personality changes in some Big Five traits^{27,39,42}. For example, Thielmann and de Vries⁴³ examined VPC over 3.5 years ($N = 134$) and found that goals to increase in openness predicted actual growth in this trait, but that goals to change the other Big Five traits were unrelated to personality changes. Some studies have even indicated that personality change goals could be associated with unwanted personality trait changes. For example, Baranski et al.⁴⁴ and Robinson et al.⁴⁵ found that the goal to increase in conscientiousness was related to decreases in this trait.

There are at least three possible reasons for the mixed evidence. First, as illustrated by the mega-analysis of Hudson and colleagues⁴⁰, the relationship between change goals and VPC is modest so that some of the studies providing mixed evidence may have lacked the statistical power to uncover the effects of interest. Second, differences in sample composition (college students vs. general public), assessment characteristics, and study length may also explain some of the heterogeneity in effect sizes^{19,21}. For example, studies that found significant associations between change goals and VPC tended to examine these effects over shorter time intervals and in college samples^{27,46} compared to studies that found no significant effects^{18,47,48}. Third, individual differences across participants may explain why findings on VPC differ across studies and people. For example, beliefs about the changeability of personality traits, goal motivation (e.g., autonomous vs. controlled), and self-concept clarity could be relevant moderators of VPC that deserve more attention in future research^{22,49,50}.

Summary. Existing evidence for the effects of personality change goals on actual trait changes without any intervention is mixed. The mere desire to change one’s personality seems to be associated with small changes in personality traits over time. This finding is in line with

theoretical claims that desiring personality changes is an important – but not sufficient – condition for actual trait changes^{20,21}, suggesting that interventions may be needed to facilitate lasting personality change.

Can interventions facilitate volitional personality change?

Study and intervention design in volitional personality change research. We identified 16 studies with 19 independent data collections that examined whether interventions can facilitate VPC (Table 2). In these studies, participants typically report their personality change goals at the first assessment and then take part in an intervention that corresponds to their personal change goals. It is then tested whether the mean level of personality traits changes from the pre-intervention assessments to post-interventions or follow-up assessments, with Cohen’s d as the typical effect size of interest (see Fig. 3B).

Different interventions have been used to foster VPC, including one-on-one coachings^{51,52}, personalized smartphone-apps^{23,29}, and online interventions based on behavioral challenges^{53,54}. On average, interventions lasted for 10.53 weeks ($SD = 4.22$) and most interventions were conducted at least once per week ($k = 18$, 95%).

To provide an overview of these interventions, we classified the implemented intervention strategies according to the taxonomy of neuroticism interventions by Wright et al.³⁴. This taxonomy distinguishes relevant *intervention strategies*, *levels*, and *aspects* of intervention targets. *Intervention strategies* describe the active ingredient of interventions. As can be seen in Table 3, the most frequently used intervention strategies were psychoeducation ($k = 19$, 100%), goal setting ($k = 18$, 95%), and increasing discrepancy awareness ($k = 16$, 84%). *Levels of intervention targets* describe whether an intervention primarily targets the state level, the habit level, or the trait level of personality (see Fig. 1), whereas the *aspects of intervention targets* refer to whether an intervention strategy focuses on the affective, behavioral, and/or cognitive aspects of personality. We found that all VPC interventions targeted trait-level and cognitive components of personality ($k = 19$, 100%), with most interventions additionally targeting habit-level ($k = 18$, 95%), state-level ($k = 18$, 95%), and behavioral components ($k = 16$, 84%) of personality traits. Classifying VPC interventions within this taxonomy of intervention strategies, levels, and aspects may facilitate knowledge integration and communication regarding how efficacious VPC interventions are designed³⁴.

Effect of volitional personality change interventions. Overall, the 16 studies included in this review on intervention-induced VPC provided evidence to support that VPC interventions can foster desired personality changes. For example, Stieger et al.²³ found that a smartphone-based digital personality intervention (PEACH) was efficacious in promoting trait changes. This smartphone intervention comprised more than 10 different intervention strategies such as resource identification, goal setting, and motivated reflection and targeted all levels and aspects of personality. After taking part in the smartphone intervention, participants who desired to increase in a trait showed stronger increases compared to a wait-list control group and participants who desired to decrease in a trait showed stronger decreases than the control group.

To estimate the average effect size of intervention-induced VPC, we conducted a random-effects meta-analysis across all non-overlapping samples that provided sufficient effect size information (26 effect sizes, 7 studies; see Table 2) using the *metafor* package (R Version 4.3.2)⁵⁵. Our effect size of interest was the standardized mean difference of the targeted personality trait before the intervention (M_{Pre}) and after the intervention (M_{Post}) with bias correction factor c to account for overestimation of the population effect size^{55–57}:

$$d = \frac{M_{Post} - M_{Pre}}{SD_{Pre}} \quad (1)$$

Table 1 | Overview of studies examining volitional personality change without intervention

Reference	N	Mean age	Country	Design	Summary of primary result
Hudson et al. ⁴⁰	2238	20.34	US	Mega-analysis across samples with similar designs: 16-week longitudinal studies with assessment of Big Five traits every week and change goal assessment at T1	Change goals predict trait growth for all traits, with strongest association for neuroticism; quadratic relationship found for some traits, suggesting that change goals predict trait growth especially strongly in first weeks after the baseline assessment
Hudson et al. ⁵⁰	1085	20.48	US	Integration of samples with similar design: 16-week longitudinal study with assessment of Big Five traits every week and change goal assessment at T1	Change goals predict trait growth for extraversion, conscientiousness, and emotional stability; some interactions found with mindset about personality change
Robinson et al. ⁴⁵	170		UK	12-month longitudinal study with two assessments of the Big Five, trait change goals, and change plans	Change goals predict changes in traits in undesired direction: Having a goal to decrease in neuroticism was associated with a slight increase in the trait over time and having a goal to increase conscientiousness was associated with a slight decrease in the trait over time
Asadi et al. ⁴²	160	21.10	Iran	12-month longitudinal study with two assessments of the Big Five and trait change goals	Change goals predict trait change only for openness but not for other Big Five traits
Baranski et al. ⁴⁴ – Sample 1	530	41.50	US	1-year longitudinal study with two personality assessments, at T1 description of change goals	Change goals did not predict actual personality change in any of the Big Five traits
Baranski et al. ⁴⁴ – Sample 2	361	20.50	US	6-months longitudinal study with two personality assessments, at T1 description of change goals	Change goals did not predict personality changes in the desired direction; for conscientiousness, even a counterintuitive effect was found: those who want to increase in conscientiousness report decreases in this trait change
Hannikainen et al. ⁴⁶	414	20.30	US	15-week longitudinal study with empathy assessments each week and assessment of empathy change goals at T1	Goals to change empathy (empathic concern and perspective taking) predict actual changes in empathy
Hudson, Derringer et al. ^{39a}	146	20.12	US	16-week longitudinal study with personality assessment every week and change goal assessment at T1	Change goals predict actual trait changes for extraversion, neuroticism, and openness, but not for agreeableness and conscientiousness
Hudson and Fraley ^{37a}	158	20.13	US	16-week longitudinal study with personality assessment every week and change goal assessment every 5 weeks	Change goals predict actual trait changes for extraversion, agreeableness, and neuroticism, but not for openness and conscientiousness
Lücke et al. ⁴⁷	382	36.92	Germany	2-year longitudinal study with personality trait assessments every 6 months + additional daily diary assessments every two months for 10 days (during first year); change goals rated regarding importance and feasibility (during first year)	Change goals did not predict actual personality trait change in any of the Big Five traits
Moore et al. ⁴⁹	248	38.83	Canada	6-month longitudinal study with personality assessments at beginning and end of study and description of change goals at baseline	Perceived change goal progress was associated with actual personality trait changes in desired directions
Nofle et al. ⁴⁸ – Sample 1	300	19.03	Japan/US	1-year longitudinal study with personality assessments and change goal assessment at beginning and end of study period	Ideal level of Big Five controlled for current level of Big Five (i.e., change goal) did not significantly predict personality changes over time
Thielmann and de Vries ⁴³	134	20.40	Netherlands	3.5-years longitudinal study with two personality assessments and change goal assessments	Change goals predict actual personality trait change only for openness but not for other Big Five traits
Blackie and Hudson ⁷¹	275	32.36	UK	16-weeks longitudinal study with personality assessments every 2 weeks	Change goals were not significantly related to personality changes but some interactions between change goals and trauma exposure in predicting changes in agreeableness
Rufino et al. ⁷²	463	19.73	US	16-week longitudinal study with assessment of personality traits (maladaptive and normal-range traits) once per week and assessment of change goals at T1	Change goals predict volitional change for disinhibition and negative affectivity but not for other maladaptive traits

This table summarizes samples, designs, and results of studies examining volitional personality change without intervention. More study details including summaries of the results are presented in our ShinyApp.

^aThis study was included in the mega-analysis of Hudson et al.⁴⁰.

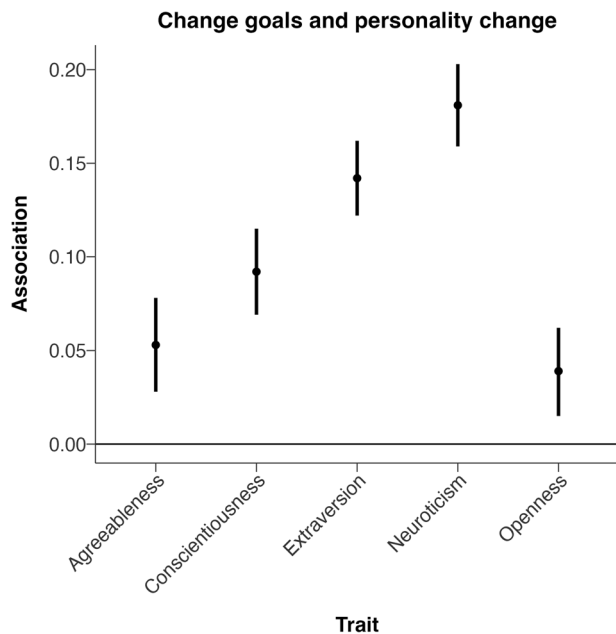


Fig. 4 | Illustration of associations between change goals and personality changes. This figure illustrates the association (standardized b in a multilevel model) between change goals and personality changes based on the mega-analytic findings ($N = 2238$) by Hudson et al.⁴⁰. Error bars indicate 95% confidence intervals.

The sampling variance of this effect size was calculated as:

$$v(d) = \frac{2 \cdot (1 - r)}{n} + \frac{d^2}{2 \cdot n} \quad (2)$$

Missing test-retest correlations r were imputed based on the meta-analytic results on the rank-order stability of personality traits by Bleidorn et al.¹² (Table 5). As most studies contributed more than one effect size, we used the three-step procedure recommended by Pustejovsky and Tipton⁵⁸ to deal with the dependency of effect sizes. First, we estimated the approximate variance-covariance matrix based on working assumptions on the decency of effect sizes. Specifically, we assumed that different traits targeted in the same sample were correlated with $r = 0.55$ and that different subsamples within the same study were correlated with $r = 0.23$ (deviation from the preregistration: we slightly changed the working assumptions on the dependency of effect sizes as the dependency structure in the dataset differed from what we had expected). Using the approximate variance-covariance matrix of Step 1, we then estimated a multilevel meta-analytic model with effect sizes nested in studies. Third, we calculated cluster-robust standard errors. Accurate working assumptions in Step 1 increase the efficiency of the meta-analytic estimations, but effect size estimates are unbiased even if the working assumptions of Step 1 are inaccurate⁵⁸. All statistical tests were two-sided.

Across interventions and traits, the average effect was $d = 0.22$ ($t(5.94) = 2.51$, 95% CI = [0.005, 0.433]), suggesting that VPC interventions are efficacious in promoting trait changes in the desired direction (see Supplementary Note 2, Supplementary Table 2 in the supplemental material). We found no evidence for publication bias as for example Egger's regression test was not significant ($b = -1.76$, $p = 0.579$; see Supplementary Table 3 and Supplementary Figs. 2 and 3 supplemental material). As illustrated in Fig. 5, this effect size is approximately five-times stronger than normative personality trait changes over the same time interval ($d = 0.04$) and 1.5-times stronger than the effect size of VPC without interventions ($d = 0.14$)⁴⁰. However, it seems to be lower than effect sizes found for personality changes in context of psychotherapeutic interventions ($d = 0.37$)¹³. Furthermore, interventions differed in their efficacy, with some

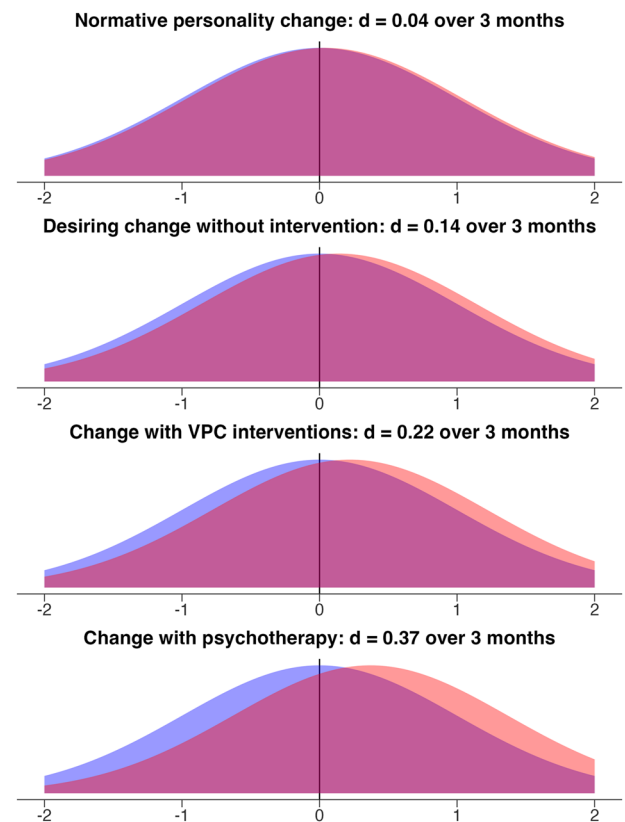


Fig. 5 | Illustration of effect sizes (Cohen's d) for personality change. This figure illustrates effect sizes of normative personality changes¹² (effect size calculated based on Model 2 of Table 7; $N = 242,542$), volitional personality change without intervention⁴⁰ (effect size calculated based on bottom half of Table 2; $N = 2238$), intervention-induced volitional personality change ($N = 3390$), and personality changes in context of psychotherapy¹³ (effect size mentioned in abstract; $N = 20,024$). More details on the calculation of these effect sizes can be found in Supplementary Note 5 of the supplemental material. The blue distribution illustrates personality trait scores at the reference timepoint, whereas the red distribution illustrates scores for the second timepoint when change was measured. The peak of each distribution represents its mean value, with the x -axis in standard deviation units. As all effect sizes refer to pre-post comparisons, they are in principle comparable to each other. However, effect size estimates were derived from different publications relying on different inclusion criteria and different ways to aggregate effect sizes. VPC = volitional personality change.

interventions even leading to unwanted personality changes (Fig. 6). For example, Hudson and Fraley²⁸ found personality changes in undesired directions if participants were provided with vague instructions to implement new behaviors. Thus, to design successful VPC interventions, careful consideration must be given to the conditions, moderators, and mechanisms of VPC.

Conditions, moderators, and mechanisms of intervention-induced volitional personality change. Summarizing the existing evidence on conditions, moderators, and mechanisms of intervention-induced VPC helps to evaluate theoretical claims about VPC and advance our understanding of what constitutes a successful VPC intervention. First, most VPC interventions were designed in accordance with theoretical ideas about the processes and mechanisms of VPC³⁵. For example, successful interventions like the smartphone intervention PEACH targeted multiple change mechanisms in line with *Common Change Factor Model*^{23,59}. Although supporting the general relevance of these change mechanisms, it remains unclear whether one, few, or all of these common change factors must be targeted for VPC to be successful. Similarly, based on the

Table 2 | Overview of studies examining VPC with intervention

Reference	Sample	N	Mean Age	Country	Design	Intervention	Primary result
Allan et al. ^{51a}	A	54	42.18	Australia	26-week longitudinal study with baseline assessment, a 10-week coaching period with personality assessments at Week 5 and 10, post-intervention assessment at Week 22	One-on-one coaching procedure: - Assessment of current trait levels and values - Reflection on current life and discrepancies between current and ideal self - Develop change goals - Development of a coaching plan using eclectic therapeutic techniques (e.g., goal setting) - Evaluation of progress and adjustment of coaching	Significant and lasting decreases in neuroticism, increases in extraversion, temporary changes in conscientiousness, but no change in agreeableness and openness over the course of the coaching intervention
Martin et al. ⁵²	A	54	42.18	Australia	26-week longitudinal study with baseline assessment, a 10-week coaching period with personality assessments at Week 5 and 10, post-intervention assessment at Week 22	One-on-one coaching procedure: - Assessment of current trait levels and values - Reflection on current life and discrepancies between current and ideal self - Develop change goals - Development of a coaching plan using eclectic therapeutic techniques (e.g., goal setting) - Evaluation of progress and adjustment of coaching	Coaching intervention was effective in changing the targeted personality facets (with stable effects at follow-up); effects were significant compared to a control group
Martin-Allan et al. ⁶⁷	A	25	50.08	Australia	4-year longitudinal study with baseline assessment, a 10-week coaching period with personality assessments at Week 5 and 10, post-intervention assessment at Week 22 + 4-year follow-up	One-on-one coaching procedure: - Assessment of current trait levels and values - Reflection on current life and discrepancies between current and ideal self - Develop change goals - Development of a coaching plan using eclectic therapeutic techniques (e.g., goal setting) - Evaluation of progress and adjustment of coaching	Coaching intervention maintained its effect over a 4-year follow up
Hudson ^{68a}	B	467	20.02	US	16-week longitudinal study with assessment of Big Five traits and Dark Triad every week and change goal assessment at T1	Online intervention based on behavioral challenges: - Selection of change goals and repeated personality assessments - Weekly goal setting regarding specific behavioral challenges (differing in difficulty) - Feedback on progress and new challenges	Completing behavioral challenges predicted desired changes in the targeted trait for extraversion, agreeableness, and neuroticism but not for conscientiousness and openness
Hudson et al. ⁶⁴	C	377	20.67	US	16-week longitudinal study with personality assessment every week and change goal assessment at T1	Online intervention based on behavioral challenges: - Selection of change goals and repeated personality assessments - Weekly goal setting regarding specific behavioral challenges (differing in difficulty) - Feedback on progress and new challenges	Completing behavioral challenges predicted desired changes for extraversion, conscientiousness, and neuroticism but not for agreeableness and openness
Hudson and Fraley ²⁸ – Sample 1	D	62	20.16	US	16-week longitudinal study with personality assessment every week and change goal assessment at T1; participants randomized to intervention group or control group	Online intervention based on self-developed change plan: - Assessment of change goals and repeated personality assessments - Reminders of and reflection on change goals - Development of own change plans	Intervention was not effective or even backfired (for agreeableness, neuroticism, conscientiousness); control group changed more in desired direction than intervention group
Hudson and Fraley ²⁸ – Sample 2	E	75	20.10	US	16-week longitudinal study with personality assessment every week and change goal assessment at T1; participants randomized to intervention group or control group	Online intervention based on self-developed change plan: - Assessment of change goals and repeated personality assessments - Reminders of and reflection on change goals (this time: specific if-then plans)	Modified intervention was successful in predicting desired changes in extraversion, neuroticism, and conscientiousness; intervention group changed more in desired direction than the control group
Hudson ^{27a}	F	414	20.31	US	16-week longitudinal study with trait assessment each week; participants chose whether they want to increase in conscientiousness or emotional stability but are then randomized to challenges changing either of the two traits	Online intervention based on behavioral challenges: - Selection of change goals and repeated personality assessments - Weekly goal setting regarding specific behavioral challenges (differing in difficulty) - Feedback on progress and selection of new challenges	Completing challenges designed to increase conscientiousness was successful independent of whether people chose to change the trait; neuroticism did only change if people chose to change this trait

Table 2 (continued) | Overview of studies examining VPC with intervention

Reference	Sample	N	Mean Age	Country	Design	Intervention	Primary result
Massey-Abemathy and Robinson ⁶⁵ – Sample 1 ^a	G	27	33.00	US	5-week longitudinal study with two personality assessments; in between: diary and reminders regarding behavioral activation	Online intervention based on personal change goals: - Development of change goals including specific behaviors - Instructions for behavioral activation with regular reminders and self-reinforcement - Instruct a friend to support the new behavior	Intervention was successful in increasing facets of conscientiousness
Massey-Abemathy and Robinson ⁶⁵ – Sample 2 ^a	H	116	22.00	US	12-weeks longitudinal study with two personality assessments; between assessments: reminder on how they could change their personality	In-class personality intervention: - Psychoeducation on personality and feedback on own scores - Suggestions on how to improve specific traits with regular reminders	Participants of the intervention group significantly in the desired direction for all traits expect openness
Steger et al. ^{24a}	I	1523	24.99	Switzerland	24-week longitudinal study with pre-intervention trait assessment, then 1-week ESM baseline, 10-week intervention via PEACH app, 1-week ESM post assessment, post-intervention trait assessment, 3-month follow-up; comparison with a wait-list control group	App-based personalized intervention: - Interaction with a chatbot - Targeting of four common change factors: insight, discrepancy awareness, strength orientation, practice - General components: psychoeducation, goal setting, and behavioral activation - Weekly core themes (e.g., organizing a change team, learning from experiences and by reflection, identification of situational triggers, reflection on advantages and disadvantages of change)	PEACH-intervention was effective in facilitating personality trait change in desired direction compared to the control group (found for increases in extraversion, decreases in neuroticism; increases in conscientiousness); effect of intervention was maintained or even boosted until follow-up; effects at least partly replicated for other-reports
Olaru et al. ⁸³	I	418	24.91	Switzerland	24-week longitudinal study with pre-intervention trait assessment, then 1-week ESM baseline, 10-week intervention via PEACH app, 1-week ESM post assessment, post-intervention trait assessment, 3-month follow-up; comparison with a wait-list control group	App-based personalized intervention: - Interaction with a chatbot - Targeting of four common change factors: insight, discrepancy awareness, strength orientation, practice - General components: psychoeducation, goal setting, and behavioral activation - Weekly core themes (e.g., organizing a change team, learning from experiences and by reflection, identification of situational triggers, reflection on advantages and disadvantages of change)	PEACH-intervention was also leading to changes in life satisfaction and domain satisfaction; changes were associated with personality changes
Olaru et al. ⁷³	I	552	25.35	Switzerland	24-week longitudinal study with pre-intervention trait assessment, then 1-week ESM baseline, 10-week intervention via PEACH app, 1-week ESM post assessment, post-intervention trait assessment, 3-month follow-up; comparison with a wait-list control group	App-based personalized intervention: - Interaction with a chatbot - Targeting of four common change factors: insight, discrepancy awareness, strength orientation, practice - General components: psychoeducation, goal setting, and behavioral activation - Weekly core themes (e.g., organizing a change team, learning from experiences and by reflection, identification of situational triggers, reflection on advantages and disadvantages of change)	PEACH-intervention differed in its efficacy across facets (e.g., more pronounced changes in anxiety facet of neuroticism)
Stieger et al. ⁸²	I	157	24.99	Switzerland	52-week longitudinal study with pre-intervention trait assessment, then 1-week ESM baseline, 10-week intervention via PEACH app, 1-week ESM post assessment, post-intervention trait assessment, 3-month follow-up, 1-year follow-up assessment; comparison with a wait-list control group	App-based personalized intervention: - Interaction with a chatbot - Targeting of four common change factors: insight, discrepancy awareness, strength orientation, practice - General components: psychoeducation, goal setting, and behavioral activation - Weekly core themes (e.g., organizing a change team, learning from experiences and by reflection, identification of situational triggers, reflection on advantages and disadvantages of change)	PEACH-intervention was still successful at 1 year follow-up, with further decreases in the group that wanted to decrease in a trait

Table 2 (continued) | Overview of studies examining VPC with intervention

Reference	Sample	N	Mean Age	Country	Design	Intervention	Primary result
Allemand et al. ⁵⁹	I	679	25.3	Switzerland	24-week longitudinal study with pre-intervention trait assessment; then 1-week ESM baseline, 10-week intervention via PEACH app, 1-week ESM post assessment, post-intervention trait assessment, 3-month follow-up; comparison with a wait-list control group	App-based personalized intervention: - Interaction with a chatbot - Targeting of four common change factors: insight, discrepancy awareness, strength orientation, practice - General components: psychoeducation, goal setting, and behavioral activation - Weekly core themes (e.g., organizing a change team, learning from experiences and by reflection, identification of situational triggers, reflection on advantages and disadvantages of change)	PEACH-intervention was successful in changing weekly personality states with a quadratic effect found for conscientiousness indicating stronger increases in the first weeks of the intervention
Allemand et al. ⁵⁹	I	1179	24.83	Switzerland	24-week longitudinal study with pre-intervention trait assessment; then 1-week ESM baseline, 10-week intervention via PEACH app, 1-week ESM post assessment, post-intervention trait assessment, 3-month follow-up; comparison with a wait-list control group	App-based personalized intervention: - Interaction with a chatbot - Targeting of four common change factors: insight, discrepancy awareness, strength orientation, practice - General components: psychoeducation, goal setting, and behavioral activation - Weekly core themes (e.g., organizing a change team, learning from experiences and by reflection, identification of situational triggers, reflection on advantages and disadvantages of change)	PEACH-intervention led to positive changes in self-esteem for neuroticism group (and possibly also extraversion group); increases in self-esteem were correlated with personality traits in desired direction
Stieger et al. ⁶¹ – Sample 1 ^a	J	70	23.47	Switzerland	4-week longitudinal study with baseline assessment, 2 week of intervention, post-intervention assessment, and follow-up assessment 2 weeks later; comparison between two different intervention groups	App-based personalized intervention: - Interaction with a chatbot to facilitate personality change - Setting behavioral challenges, regular reminders - Text messages with reflection tasks, feedback, and psychoeducation	Intervention was successful at changing the intended trait (self-discipline and openness to action); effects only partly generalized to the general trait domain
Stieger et al. ⁶¹ – Sample 2 ^a	K	185	25.3	Switzerland	4-week longitudinal study with baseline assessment, 2 week of intervention, post-intervention assessment, follow-up assessment 2 weeks later, second-follow-up another 4 weeks later; comparison between two different intervention groups	App-based personalized intervention: - Interaction with a chatbot to facilitate personality change - Setting behavioral challenges, regular reminders - Text messages with reflection tasks, feedback, and psychoeducation	Intervention was successful at changing the intended trait (self-discipline and openness to action); effects only partly generalized to the general trait domain
Mendonça et al. ^{74a}	L	500	36.64	US	12-week longitudinal study with trait assessments in Week 1, 11, and 12 and change goal assessment at Week 1 and 11	Online intervention based on behavioral challenges: - Selection of change goals and repeated personality assessments - Weekly goal setting regarding of self-created behavioral challenges (differing in difficulty) - Feedback on progress and selection of new challenges, reminder of challenges	Intervention was successful in changing trait intellectual humility but not trait compassion; weekly increases in state compassion and state humility found

This table summarizes samples, designs, interventions, and results of studies examining VPC with interventions. More details on the studies can be found in our ShinyApp. The sample column indicates whether different studies were based on identical samples. The same letter across populations means that the same sample was used.
^aStudy was included in meta-analysis to estimate the average effect of intervention-induced VPC.

Table 3 | Overview of employed interventions

Variable	Number of interventions	Percentage of interventions
Intervention strategies		
Behavioral activation	13	68.42
Cognitive restructuring	6	31.58
Discrepancy awareness	16	84.21
Goal setting	18	94.74
Feedback	14	73.68
Mindfulness/Meditation	2	10.53
Motivated reflection	13	68.42
Physical activity	2	10.53
Positive reinforcement	10	52.63
Psychoeducation	19	100.00
Resource identification	8	42.11
Skill building: observation	7	36.84
Skill building: practice	10	52.63
Social support	9	47.37
Other	2	10.53
Targeted level		
Trait	19	100.00
Habit	18	94.74
State	18	94.74
Targeted component		
Affect	9	47.37
Behavior	16	84.21
Cognition	19	100.00
Intensity		
Less than once per week	1	5.26
Once per week	9	47.37
More than once per week	9	47.37

This table summarizes the employed intervention strategies, targeted levels, targeted components, and intensity of VPC intervention. An intervention can employ multiple strategies, target multiple levels, and target multiple components.

existing evidence, it can be concluded that interventions combining different intervention strategies, targeting different levels of personality, and focusing on different aspects are successful in facilitating VPC^{51,60,61}. However, it is less clear which intervention strategies are most successful to elicit VPC and whether interventions need to target all aspects and levels of personality³⁴.

Second, in line with the theoretical models of Hudson²¹ and Hennecke et al.²⁰, having the goal to change one's personality traits and implementing new behaviors seem to be important conditions and moderators for intervention-induced VPC. For example, Hudson et al.⁵⁴ found that completing behavioral challenges designed to elicit personality changes predicts VPC over 4 months. However, based on the current state of evidence, it is difficult to draw definitive conclusions on intervention-related moderators of VPC as power for meta-analytic moderation analysis was limited. Additionally, only few moderation effects have been examined in existing VPC-intervention studies⁵². Thus, more research is needed on how VPC interventions should be designed, for example, in terms of their duration and intensity to evaluate the *Model of Interventions to Change Personality Traits*²¹. Although the existing evidence shows that VPC can be successful even with relatively mild weekly interventions lasting 2 to 3 months, the optimal duration and intensity of VPC interventions still need to be determined. Furthermore, the effect of VPC interventions seems to vary across traits – and this is true even within single studies (see Fig. 6 and Table 4). The existing research suggests that the strongest effects emerged for extraversion ($d = 0.38$, $t(1.61) = 6.88$, 95% CI = [0.078, 0.680]), neuroticism ($d = 0.33$, $t(2.99) = 2.10$, 95% CI = [−0.171, 0.830]), and conscientiousness ($d = 0.31$, $t(3.80) = 3.37$, 95% CI = [0.049, 0.571]), whereas effect sizes tended to be lower for agreeableness ($d = 0.15$, $t(2.96) = 1.25$, 95% CI = [−0.229, 0.521]) and openness ($d = 0.21$, $t(1.99) = 1.32$, 95% CI = [−0.469, 0.879]). However, confidence intervals were large for all traits because at most eight effect sizes were available for a specific trait. Future research is thus needed to gain more precise estimates of VPC in specific traits and to examine why the effects of VPC interventions might differ across traits.

Sustainability and generalizability of intervention-induced volitional personality change. To evaluate the utility of VPC to promote health and other desired life outcomes, questions about the long-term effects and generalizability of VPC interventions are of critical relevance. VPC

Fig. 6 | Forest-plot illustrating effect sizes of intervention-induced VPC. This figure illustrates effect sizes of intervention-induced VPC in different studies ($N_{total} = 3390$). Effect sizes are color-coded according to the seven studies that were included in our meta-analysis. Different personality traits are coded with different shapes of the point estimates. Error bars indicate 95% confidence intervals.

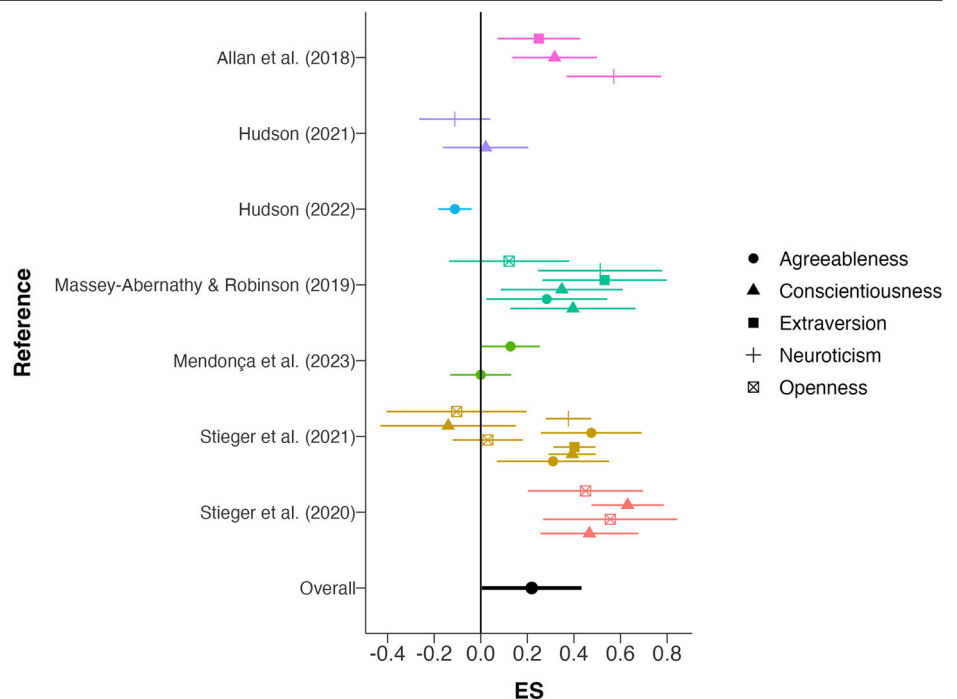


Table 4 | Meta-analytic results on intervention-induced pre-post personality changes

Trait	<i>k</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>df</i>	<i>p</i>	95% CI
Across traits	26	0.22	0.09	2.51	5.94	0.046	[0.005, 0.433]
Agreeableness	6	0.15	0.12	1.25	2.96	0.300	[−0.229, 0.521]
Conscientiousness	8	0.31	0.09	3.37	3.80	0.030	[0.049, 0.571]
Extraversion	3	0.38	0.06	6.88	1.61	0.035	[0.078, 0.680]
Neuroticism	4	0.33	0.16	2.10	2.99	0.127	[−0.171, 0.830]
Openness	5	0.21	0.16	1.32	1.99	0.320	[−0.469, 0.879]

This table summarizes the findings of the meta-analysis on changes in personality traits from pre-intervention assessments to post-event intervention assessments. *k* = number of effect sizes.

may only be of practical relevance for the general public if intervention-induced personality changes are lasting and generalize to other variables such as health behaviors or well-being⁵. Generally, the existing evidence supports that the effects of VPC interventions are lasting. In an exploratory analysis (not preregistered), we aggregated 17 effect sizes from four studies with long-term follow-up assessments and found that personality changed by $d = 0.37$ ($t(2.40) = 5.97$, 95% CI = [0.140, 0.591]) in the desired direction between the pre-intervention assessment and follow-up. For example, the effects of the smartphone intervention PEACH were maintained or even increased over a 3-month and a 1-year follow-up interval^{23,62}.

Furthermore, there is initial evidence that the effects of intervention-induced VPC can be replicated when using non-self-report measures of personality. Two studies found that close others were also able to detect intervention-induced VPC^{23,61}. Although effect sizes were descriptively smaller when using other-reports compared to self-reports²³, these findings suggest that VPC interventions facilitate more than just changes in self-perceptions such that they additionally promote changes in observable behaviors.

Finally, interventions aimed at facilitating VPC also seem to lead to positive spillover effects in other domains. For example, Allemand et al.⁵⁹ and Olaru et al.⁶³ found that the smartphone-app PEACH did not only lead to changes in personality traits but also to associated increases in life satisfaction, domain satisfaction, and self-esteem. These studies provide initial evidence that changing personality traits may indeed be beneficial for other life outcomes. However, future research should examine whether the effects of VPC interventions generalize to other outcomes such as physical or mental health.

Summary. Existing evidence for VPC interventions paints a promising picture, suggesting that even relatively low-key digital interventions can lead to personality trait changes. Furthermore, the effects seem to be lasting and generalize to other constructs like well-being. However, the effect sizes of interventions differed across interventions and traits, with some interventions failing to promote desired personality changes²⁸. Thus, future research on what constitutes a successful VPC intervention seems necessary.

Discussion

Personality traits could be actionable targets for public interventions because they have been theorized to impact health, well-being, and relationships and many people are intrinsically motivated to change aspects of their personality^{2,5,8,11,16,17,64,65}. However, the mere desire to change one's personality seems to be only weakly related to actual trait changes, with associations differing across studies and traits. Thus, interventions may be needed to successfully promote VPC. We found promising evidence for the efficacy VPC interventions, with an average effect of $d = 0.22$ for desired personality trait change. These changes appeared to last over up to 12 months and could be detected in both self- and other-reports of personality. However, there still is little evidence for the specific change mechanisms and moderators, leaving it open what constitutes or may affect a successful VPC intervention.

Theoretical and practical implications

Worldwide, about 60% of individuals want to change at least some aspects of their personality¹⁸. The results of the present review provide important insights into whether and how desired personality change can be successful. In line with theoretical models on VPC^{20,21,35}, having the goal to change one's personality predicted personality changes in desired directions, and people who wanted to change showed stronger personality changes than people without this desire (Fig. 4). However, change goals alone may not be sufficient for lasting personality changes. Contemporary VPC theories suggest that lasting changes in trait-relevant behaviors, habits, and personality states are needed to establish personality changes, which may be achieved by targeting common change factors such as discrepancy awareness and strengths orientation^{20,21,35}. Our findings support these theoretical predictions, because successful interventions targeted personality at state, habit, and trait levels and because effective intervention strategies corresponded to theorized change factors (e.g., resource identification as a strategy to facilitate strengths orientation). Overall, existing evidence for VPC supports contemporary VPC theories.

The findings of the present review also support the idea that VPC may be practically relevant⁵. We found that interventions can facilitate lasting personality changes that are associated with changes in other life outcomes such as well-being and self-esteem^{23,29,62,63}. Given that personality changes predict a broad range of desired life outcomes, changes in personality traits could promote the attainment of these outcomes^{3,4,11,30}. For example, facilitating desired personality changes, such as increases in conscientiousness or decreases in neuroticism, could be a strategy to promote a range of favorable health outcomes like fewer health problems or lower mortality^{31–33}. The practical utility of intervention-induced VPC is further supported by the fact that VPC seems to be possible with relatively mild and cost-effective interventions including digital smartphone applications²³. VPC interventions are thus less resource intensive than other intervention strategies such as psychotherapy, underpinning that VPC could be used for health promotion in the general public.

However, to fully understand the practical utility of VPC, future research is needed that provides a more direct test of whether VPC interventions can lead to measurable long-term effects in relevant life outcomes. Furthermore, change goals and VPC interventions were also sometimes associated with unwanted personality changes, underlining the necessity for future research on when and why VPC is successful and when it backfires.

Directions for future research on volitional personality change

As the literature on VPC is still young, important questions about how VPC can be successful still need to be addressed. By providing an overview of the existing literature, the present review helps to identify the most important future directions.

First, more research on how to design efficacious VPC interventions is needed. The taxonomy by Wright et al.³⁴ offers a structured way to design and compare different interventions based on the employed strategies, their level (trait, habit, state), and aspect (affect, behavior, cognition) of the targeted personality constructs. A systematic test of these intervention characteristics and strategies would advance our theoretical understanding of the VPC process and provide important information for the design of

efficacious VPC interventions⁶⁶. Relatedly, more research on the moderators of VPC – both with and without interventions – is needed. For example, examining how personal characteristics like self-regulation capacity or beliefs about the malleability of personality traits are related to VPC is important so that researchers can refine their theoretical predictions and customize interventions to individual needs and abilities²¹.

Second, although there is initial evidence that VPC is lasting and can be detected by close others^{23,62,67}, future research should aim at replicating and extending these findings. Specifically, more research on other-reported VPC is needed to allow for a meaningful meta-analytic aggregation of effect sizes of other-reported VPC. Such an analysis would be vital to underscore the possibility of VPC because other-reports may be less biased by demand characteristics than self-reports^{28,54}. In addition, future research on the sustainability of VPC and trickle-down effects on other life outcomes and relevant mediating variables such as health behaviors is needed to better understand the practical relevance of VPC⁵.

Third, existing research has been largely restricted to relatively young and affluent samples from the US and Europe, raising questions about the cross-cultural generalizability of results⁶⁸. Given that the goals to change personality traits differ across countries¹⁸, future research is needed to examine whether and how VPC can be successful in other cultures (see Asadi et al.⁴², for a notable exception).

Limitations

The present review has several limitations. First, although research on VPC is accumulating quickly and our review may be beneficial for future VPC research by providing an overview of a heterogeneous field, the literature on VPC is still in its infancy. Thus, several interesting questions could not yet be addressed. Specifically, a meta-analytic moderator analysis of the effects of VPC interventions could help researchers better understand how intervention characteristics are related to VPC. This remains a task for future research.

Second, we examined the effects of VPC interventions using pre-post comparisons. However, we were not able to examine personality changes in control groups as only few studies reported such effect sizes. While studies with control groups suggest that VPC interventions lead to stronger changes in desired directions in treatment groups than control groups^{23,28,52}, meta-analytically comparing effect sizes between these groups would provide stronger evidence for the efficacy of VPC interventions.

Third, we integrated research on VPC without interventions in a narrative synthesis. We used this approach since the number of such studies was limited and because these studies reported different types of effect size measures. As such, a meta-analytic aggregation was not possible for our first research question of whether VPC is possible without intervention.

Conclusion

Personality traits are associated with a broad range of relevant life outcomes, including health, well-being, and relationship success^{1–8,69}. As many people want to change their personality traits^{18,19}, the question arises whether VPC can be used to promote personal growth and the attainment of desired outcomes in the general population. Initial results on VPC are promising. Although change goals were only weakly related to personality changes without interventions, interventions aimed at facilitating VPC proved to be successful in inducing personality trait changes in the desired direction. These findings support theoretical models that highlight the possibility of VPC^{20,21,35}. However, future research is needed to better understand when VPC is (not) successful, which intervention strategies are most effective, whether VPC can be replicated in different age groups and cultures, and whether VPC can facilitate the attainment of desired life outcomes.

Data availability

All data extracted from the primary research included in the review and coding materials can be retrieved from <https://osf.io/tw358/>⁷⁰.

Code availability

All analysis code can be retrieved from <https://osf.io/tw358/>⁷⁰. Data analysis was conducted in R (Version 4.3.2). We used the metafor package (Version 4.4.0) for our analyses⁵⁵.

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Competing interests

The authors declare no competing interests.

Additional information

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