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Volitional Personality Trait Change: Can People Choose to Change Their Personality Traits?

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Previous research has found that most people want to change their personality traits. But can people actually change their personalities just because they want to? To answer this question, we conducted 2, 16-week intensive longitudinal randomized experiments. Across both studies, people who expressed goals to increase with respect to any Big Five personality trait at Time 1 tended to experience actual increases in their self-reports of that trait—as well as trait-relevant daily behavior—over the subsequent 16 weeks. Furthermore, we tested 2 randomized interventions designed to help participants attain desired trait changes. Although 1 of the interventions was inefficacious, a second intervention that trained participants to generate implementation intentions catalyzed their ability to attain trait changes. We also tested several theoretical processes through which volitional changes might occur. These studies suggest that people may be able to change their self-reported personality traits through volitional means, and represent a first step toward understanding the processes that enable people to do so.

Keywords: volitional personality change, change goals, personality development

In the 2006 movie *Stranger than Fiction*, Harold Crick is a rigid, uptight, asocial, and lonely IRS agent who wishes his life were different—who wishes he were different. Compelled by the fear of his imminent death—that he might die having never experienced an abundant and satisfying life—Harold decides to fundamentally change his personality. Over the course of the film, his austere persona ebbs into the flow of a bold new life brimming with active, gratifying hobbies; vibrant, loving relationships; and deep emotional contentedness.

Recent research suggests that Harold's desires may not be so strange: A vast majority of people want to change at least some aspects of their personality traits (Hudson & Roberts, 2014). For example, Hudson and Roberts (2014) found that, on the low end, more than 87% of their participants reported wanting to become more extraverted than they were at the time—and on the high end, over 97% expressed desires to increase in conscientiousness. Indeed, contemporary Americans spend tens of billions of dollars each year on self-help books and programs that promise increases in personality traits such as sociability, emotional stability, and productivity (Linder, 2009).

But can people actually change their personality traits simply because they desire to do so? There are competing perspectives on this issue in personality theory and research. Some perspectives would suggest that this idea is, in fact, stranger than fiction. For example, McCrae and Costa (2008) have argued that personality traits are biologically programmed entities that cannot be altered

(except through biologically predetermined maturation). In contrast, a large body of research has demonstrated that, despite being relatively stable (Fraley & Roberts, 2005; Roberts, 2009), personality traits are malleable and change in response to a variety of external factors, including normative life experiences (e.g., Hudson, Roberts, & Lodi-Smith, 2012; Lehnart, Neyer, & Eccles, 2010; Lodi-Smith & Roberts, 2007). However, virtually no existing research has examined whether people can change their personalities simply because they desire to do so. To take an initial step toward filling this gap in the empirical literature, we conducted two 4-month longitudinal randomized experiments. In each study, participants self-reported their goals to change their personality traits and subsequently provided ratings of their actual personality traits for up to 16 weeks. These data were used to examine whether goals to change specific personality traits were associated with corresponding actual changes in self-reports of those traits over time. Furthermore, each study tested a slightly different intervention designed to help participants attain desired trait changes.

Can Personality Traits Change?

Over the past several decades, an enormous body of research has demonstrated that people's personality traits can—and do—change for a variety of reasons. For example, as individuals age, their personality traits tend to change in the direction of greater maturity (e.g., Bleidorn, Kandler, Riemann, Spinath, & Angleitner, 2009; Lucas & Donnellan, 2011; Roberts & Mroczek, 2008; Roberts, Walton, & Viechtbauer, 2006; Roberts, Wood, & Caspi, 2008; Soto, John, Gosling, & Potter, 2011). Specifically, as people get older, they tend to become more agreeable, conscientious, and emotionally stable. These normative patterns of change are likely driven by biological maturation processes (Bleidorn et al., 2009; Costa & McCrae, 2006; McCrae et al., 1999), as well as common life experiences that shape people in similar ways (e.g., commit-

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ting to a job or romantic partner; Hudson et al., 2012; Lehnart et al., 2010; Roberts et al., 2006; Roberts & Wood, 2006).

Beyond these normative patterns of maturation, there is evidence that people's experiences—and the social roles that they occupy, in particular—may idiosyncratically sculpt their personality traits (Hudson et al., 2012; Lehnart et al., 2010; Lodi-Smith & Roberts, 2007; Roberts & Bogg, 2004). For example, one study found that as people become more heavily invested in their jobs, they tend to simultaneously increase in conscientiousness (Hudson et al., 2012). Similarly, investing in a romantic relationship is associated with increases in emotional stability (Lehnart et al., 2010). Theoretically, these personality trait changes occur for at least two reasons. First, different social roles (e.g., employee, romantic partner) require and reinforce specific patterns of thoughts, feelings, and behaviors (Lodi-Smith & Roberts, 2007; Roberts & Wood, 2006). For example, committing to a career and being successful in it requires that one behave in a conscientious manner. Over time, these behavioral changes have the potential to coalesce into enduring personality trait changes (Burke, 2006; Magidson, Roberts, Collado-Rodriguez, & Lejuez, 2012; Roberts & Jackson, 2008; Roberts, Wood, & Caspi, 2008). A second reason social roles might catalyze trait change is that social roles influence how people conceptualize and construe their social identities. Newly adopted identities—especially ones to which people are deeply committed—may impact patterns of thoughts, feelings, and behaviors, and ultimately, personality traits (Lodi-Smith & Roberts, 2007; Roberts & Wood, 2006).

It is important to emphasize that, theoretically, experiences and social roles facilitate trait change only because they serve as consistent presses for new patterns of thoughts, feelings, and behaviors, and because they promote the adoption of new identities. It is the modified sense of self and the new patterns of thoughts, feelings, behavior in and of themselves that eventually crystalize into enduring trait change (Magidson et al., 2012; Roberts & Jackson, 2008). Supporting this notion, several studies have found that cognitive, affective, and behavioral interventions—ranging from therapy to minor behavioral alterations, such as completing daily crossword and Sudoku puzzles—are associated with changes in people's personality traits (De Fruyt, Van Leeuwen, Bagby, Rolland, & Rouillon, 2006; Jackson, Hill, Payne, Roberts, & Stine-Morrow, 2012; Magidson et al., 2012; Tang et al., 2009).

Building upon this theoretical framework, it is possible that intrapersonal factors—such as motives to change one's own personality traits—might be sufficient to catalyze changes in individuals' self-concepts and social identities, as well as their patterns of thoughts, feelings, and behavior. Theoretically, if such changes could be sustained for a long enough period of time, they might lead to enduring personality trait changes (Burke, 2006; Magidson et al., 2012; Roberts & Jackson, 2008; Roberts et al., 2008).

Volitional Personality Trait Change

Do People Want to Change Their Personality Traits?

For more than 20 years, scholars have argued that at least some people want to change aspects of their personalities (Baumeister, 1994; Kiecolt, 1994). Although various researchers have examined people's ideal and desired selves (Higgins, 1987; Markus & Nu-

rius, 1986), until recently, very little empirical research had examined specifically how people want to change their personality traits in particular. Recently, Hudson and Roberts (2014) found that goals to change personality traits are extremely common—on average, people want to increase with respect to each of the Big Five personality factors: extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience. In fact, for each dimension, less than 13% of their participants expressed desires to remain the same as they currently were. Beyond this, Hudson and Roberts found that change goals were associated with theoretically relevant predictors. For example, people who lacked socially desirable personality traits (e.g., extraversion, conscientiousness; Dunlop, Telford, & Morrison, 2012) tended to want to increase with respect to those traits. Similarly, people who were dissatisfied with certain aspects of their lives (e.g., their experience at school) expressed desires to increase with respect to personality traits that might reasonably assuage their dissatisfaction (e.g., conscientiousness).

Can People Actually Change Their Personality Traits?

Although it is clear that people have goals to change their personality traits (Hudson & Roberts, 2014), it is less clear whether those goals are merely inert, pensive musings, or whether they are associated with actual personality trait changes in the desired direction. In fact, no studies to date have examined whether people can change their traits in virtue of wanting to do so. Nevertheless, at least two studies provide evidence that some people may actively enact strategies in attempt to modify their personality traits. First, Quinlan, Jaccard, and Blanton (2006) found that college students who feared becoming boring persons in the future engaged in increased binge-drinking behavior, ostensibly in attempt to become more fun and interesting persons. Second, using qualitative methods, Stevenson and Clegg (2011) concluded that some students strategically choose extracurricular activities that they believe will instill within them desired personality traits (e.g., leadership). Taken together, these studies indicate that some people who want to change aspects of their personality traits enact strategies that they believe will shape their personalities as desired. However, it is unclear whether these attempts to manually change one's own traits can be successful.

Overview of the Present Studies

The primary purpose of the present studies was to test whether goals to change specific personality traits are associated with actual, corresponding changes in those traits over time. In two intensive longitudinal studies, participants provided ratings of their goals to change their personality traits. Over the subsequent 16 weeks, participants completed self-report measures of their personality traits. These data enabled us to examine whether change goals at the beginning of the semester were associated with actual changes in personality traits over the following 16 weeks.

What should we expect to find? Hudson and Roberts (2014) found that, when measured concurrently, change goals are negatively correlated with personality traits. That is, introverts, for example, were mostly likely to express goals to increase in extraversion. Hudson and Roberts interpreted this finding to mean that people low in socially desirable traits were likely to want to

increase in those traits. As such, at Time 1, we might expect to find a negative correlation between personality traits and change goals. If, however, people are able to volitionally change their own personality traits, we would expect to see a positive correlation between change goals, measured at Time 1, and subsequent growth in personality traits over time. In contrast, if change goals are inert, and people cannot, in fact, change their own personality traits, we might expect no correlation between change goals at Time 1 and subsequent growth in personality traits.

In addition to assessing whether change goals are associated with subsequent personality trait development, we also tested two interventions designed to catalyze desired trait change. In both studies, participants were randomly assigned to partake in a goal-setting intervention (Gollwitzer & Brandstätter, 1997) intended to help them implement small behavioral, affective, and cognitive changes that might crystalize into personality trait change over time (Burke, 2006; Magidson et al., 2012; Roberts & Jackson, 2008). It is important to note that it is possible that people are able to manually engender personality trait change on their own, sans any sort of intervention. As such, we did not necessarily expect participants in the control group to experience no volitional changes to their personality traits. Rather, we merely expected participants receiving the intervention to experience greater efficacy in changing their personalities.

It is important to emphasize that, in the present studies, we measured participants' personality traits exclusively via self-report ratings. Although self-report ratings afford numerous advantages (e.g., the self has the greatest insight into its own personality—including subtle changes therein; Paulhus & Vazire, 2007), similar to all types of personality traits measures, they also suffer several limitations (e.g., potential for self-serving biases). We discuss this issue in greater depth in the General Discussion. For now, however, we note that there is no single method that provides a direct assessment of personality and that these studies are specifically concerned with personality traits as understood by the individual in question.

Study 1

Study 1 was a 16-wave intensive longitudinal experiment designed to examine whether people's goals to change their personality traits are associated with subsequent growth in their personality traits over time. Participants self-reported their goals to change their personality traits at the beginning of the 16-week semester. Each subsequent week during the semester, participants provided self-report ratings of their personality traits. Furthermore, at Time 1, half of the participants were randomly assigned to receive a goal-setting intervention designed to catalyze the change process.

Method

Participants. A total of 135 participants were recruited from an upper-level undergraduate personality psychology course. This sample size afforded approximately 70% power to detect average-sized zero-order effects ($r = \sim .21$; Richard, Bond, & Stokes-Zoota, 2003).¹ Participants were 65% female, and ages ranged from 18 to 27 years ($M = 20.16$, $SD = 1.58$). The racial composition of the sample was 61% White, 26% Asian, 9% Hispanic, and

7% Black. The study was conducted online; participants were provided with a link to the study website and were required to register a user account to participate. The students were instructed to complete one wave of the study each week throughout the 16-week semester; however, to provide leniency and flexibility, participants could complete additional waves as frequently as once every 5 days. Students were sent automated e-mail reminders if they waited longer than 7 days between completing waves of the study. At the end of the semester, participants were awarded prorated extra credit in the course, based on the number of waves they completed. After all data were collected, participants were also provided with a personalized results Web page that summarized their personality traits and change goals, and provided graphs depicting how their personality traits had changed over the course of the semester.

On average, participants provided 9.78 waves of data. Ninety percent of the sample ($n = 122$) completed at least 2 waves. At waves 4, 8, 12, and 16, data were provided by 104 (77%), 85 (63%), 68 (50%), and 34 (25%) participants, respectively. Attrition analyses revealed that none of the personality or change goal variables at Time 1 were related to total number of waves completed (all $|r|s \leq .13$, $ps \geq .13$). Beyond this, the "change plan" intervention (described below) was also uncorrelated with total number of waves completed ($r = -.02$, $p = .86$).

Measures.

Personality traits. At each wave, participants provided self-report ratings of their Big Five personality traits. Agreeableness, conscientiousness, emotional stability (the reverse of neuroticism), and openness to experience were measured using their respective 8 to 10 item subscales from the Big Five Inventory (BFI; John & Srivastava, 1999). Extraversion, along with its 6 facets (activity, assertiveness, cheerfulness, excitement seeking, friendliness, and gregariousness), were measured using the 24-item extraversion subscale from the International Personality Item Pool 120-Item Scale Measuring Constructs Similar to Those in the Revised NEO Personality Inventory (NEO-PI-R; IPIP-120; Goldberg et al., 2006). Facets were measured so that we could examine whether change processes operate in similar ways across both trait- and facet-levels of analysis (see Jackson et al., 2009).² All items were rated on a scale ranging from *strongly disagree* (1) to *strongly agree* (5). Items were averaged at each wave to form composites (Time-1 alphas ranged from .78 [openness] to .89 [extraversion]).

Change goals. At Time 1 only, participants also provided self-report ratings of their goals to change their personality traits. Goals to change with respect to agreeableness, conscientiousness, emotional stability, and openness to experience were measured using their respective subscales from the Change Goals BFI (C-BFI; Hudson & Roberts, 2014). The C-BFI is a modified version of the BFI. Each item begins with the stem, "I want to be . . ." (e.g., "I want to be talkative") and is rated on a scale, ranging from *much more than I currently am* (+2) to *I do not want to change in this*

¹ The repeated-measures nature of the sample actually enables significantly greater statistical power. However, computing power for multilevel models is considerably more complex. As such, we report this zero-order power analysis in hopes that it will give the reader a rough idea of the effect sizes that our study could reasonably detect.

² The remaining traits were not measured on a facet level to reduce the length of the study.

trait (0) to much less than I currently am (-2). As such, participants can indicate goals to increase, decrease, or stay the same with respect to each trait. Participants' goals to change with respect to extraversion, and its 6 facets, were measured using a similarly modified version of the extraversion subscale from the IPIP-120. Items were averaged at each wave to form composites (Time-1 alphas ranged from .80 [agreeableness] to .86 [conscientiousness]).

Procedure. The study was described to participants as a "personality study" that they could complete once per week in order to earn extra credit in their psychology course. Participants were required to register an account on the study website to participate. At the first wave, participants rated their personality traits, and subsequently rated their goals to change their personality traits. Participants were then randomly assigned to one of two conditions. In one condition, participants were prompted to develop a "change plan." At Time 1, these participants were provided with brief descriptions of each of the Big Five personality dimensions, and were asked to nominate as many (or as few) traits as they desired to specifically work on changing over the course of the study. At all waves, participants in the "change plan" group were reminded of their nominated traits and asked to complete a brief writing task, envisioning "what it would look like if you attained your desired changes The purpose of this step is to envision what specific changes you would like to make." Afterward, they were asked to "list 3 ways that you can try to attain the changes you desire over the next week. Think of both general and specific steps you can take to try to change yourself." At each subsequent wave, these participants were reminded of their goals from the previous wave, and asked to rate on a scale from 0% to 100% how successfully they had attained their goal. Participants created new goals each week (although, naturally, participants could reuse goals from the previous week, if desired).

Participants in the control condition were also presented with brief descriptions of each of the Big Five personality dimensions at Time 1, but were asked to nominate those traits that they felt particularly characterized them as persons. They were instructed to nominate as many or as few as they wished. On all waves, participants in the control group were reminded of their nominated traits and were asked to complete a brief writing task, describing "why you think the traits that you checked . . . are defining

characteristics of you" and then to "describe the advantages and benefits of having these traits." This task was designed to ensure that participants in the control group spent an equal amount of time reflecting on their personality traits each week as did participants in the intervention group.

Results and Discussion

Do People Want to Change Their Personality Traits?

Table 1 contains the descriptive statistics and correlations for all Study 1 variables at Time 1. Mirroring previous research (Hudson & Roberts, 2014), participants, on average, had goals to increase with respect to each personality trait. Also replicating previous research (Hudson & Roberts, 2014), there were negative correlations between each personality trait and goals to change with respect to that trait (average $r = -.29$). Because people largely wanted to increase (and not decrease) with respect to each personality trait (see Figure 1), these correlations indicate that people who were low with respect to any given personality trait were more likely to desire to increase with respect to that trait (Hudson & Roberts, 2014).

Do People Actually Change in the Desired Direction?

Thus far the data indicate that, when asked, people report desires to change their personalities. But do individuals' self-reported personality traits actually change in the desired direction over time? To examine this question, we estimated the parameters of a series of multilevel models (MLMs). In each MLM, we examined growth in a single personality trait over time. We also tested whether growth in the trait varied as a function of people's change goals (measured at Time 1). For example, the MLM for extraversion was

$$\begin{aligned} \text{Trait-Extraversion}_{ij} = & b_0 + b_1(\text{Month})_{ij} + b_2(\text{Extraversion-Goals})_j \\ & + b_3(\text{Extraversion-Goals})_j(\text{Month})_{ij} \\ & + U_j + \epsilon_{ij} \end{aligned}$$

Table 1
Study 1 Descriptive Statistics and Correlations at Time 1

Variable	<i>M</i>	<i>SD</i>	Correlations									
			1	2	3	4	5	6	7	8	9	10
Traits												
1. Extraversion	3.48	0.49	—									
2. Agreeableness	3.85	0.60	.32	—								
3. Conscientiousness	3.55	0.59	.19	.00	—							
4. Stability	3.11	0.68	.35	.24	.08	—						
5. Openness	3.64	0.55	.21	.20	.04	.02	—					
Change Goals												
6. Extraversion	0.57	0.32	-.13	.09	-.05	-.02	.04	—				
7. Agreeableness	0.58	0.45	.00	-.22	.07	.01	-.10	.43	—			
8. Conscientiousness	0.82	0.54	.14	.16	-.48	.13	.01	.35	.38	—		
9. Stability	0.89	0.52	-.08	.12	.01	-.44	.14	.47	.38	.27	—	
10. Openness	0.63	0.40	.10	.17	-.15	.04	-.18	.36	.38	.48	.35	—

Note. 95% confidence intervals for correlations in boldface do not contain .00.

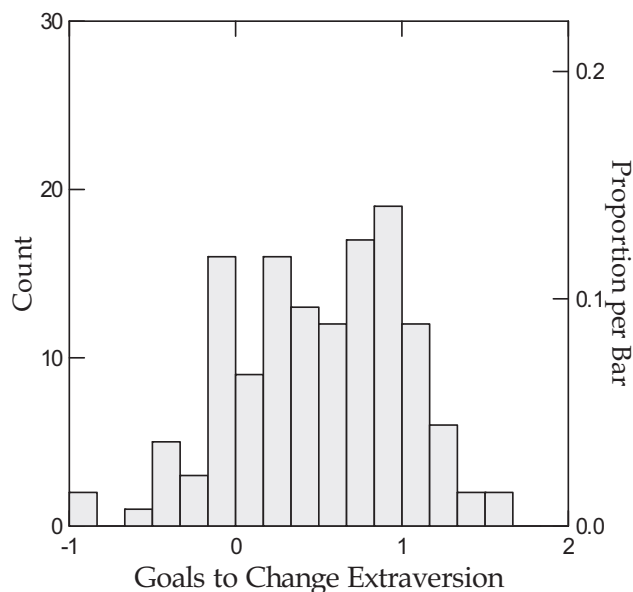


Figure 1. Histogram of goals to change with respect to extraversion. Positive values represent goals to increase with respect to extraversion, whereas negative values represent goals to decrease.

Personality traits and change goals were standardized across the entire sample before being analyzed. For ease of interpretation, we scaled time in terms of months (and centered the “month” variable at Time 1).^{3,4} As such, the b_1 coefficient provides an estimate of how much the average person in the sample (with respect to goals to increase in extraversion) increased or decreased in standardized extraversion units over the course of 1 month (e.g., a value of .05 would indicate an increase of .05 standard deviations in extraversion each month). The b_3 coefficient provides an estimate of the extent to which people who had high desires to become more extraverted increased more over time in extraversion than did their peers with lower change goals. Specifically, a positive b_3 interaction term would indicate that people with goals to increase in extraversion actually increased in self-reported trait-extraversion at a faster rate than did their peers.

The parameter estimates are reported in Table 2. With respect to mean-level growth, participants tended to slightly increase in emotional stability ($b_1 = .08$, 95% confidence interval [CI] [.05, .10]) and openness ($b_1 = .04$, 95% CI [.02, .06]) each month. In contrast, there were no statistically significant mean-level changes in extraversion ($b_1 = .02$, 95% CI [−.001, 0.04]), agreeableness ($b_1 = −.01$, 95% CI [−.04, .01]), or conscientiousness ($b_1 = −.02$, 95% CI [−.04, .001]) over time.

But did people who wanted to change their personality traits actually report changes in the desired direction? Change goals significantly moderated growth in personality traits over time for extraversion ($b_3 = .04$, 95% CI [.02, .06]), agreeableness ($b_3 = .05$, 95% CI [.03, .08]), conscientiousness ($b_3 = .05$, 95% CI [.02, .07]), and emotional stability ($b_3 = .07$, 95% CI [.05, .09]). That is, people who expressed Time 1 goals to increase in extraversion, for example, actually saw greater increases in self-report extraversion each month, as compared with their peers who had lesser desires to increase in extraversion. This interaction is illustrated in

Figure 2. Simple slope analyses revealed that participants who indicated that they wanted to be extraverted “more than they currently are” (scale score = 1; standardized score = 1.34) experienced significant increases in extraversion each month (simple $b_1 = .07$, 95% CI [.04, .10]).⁵ A different way to conceptualize this simple slope is to examine the predicted change over the course of the full 16 week (3.72 month) semester. People with goals to increase in extraversion were predicted to increase more than one quarter standard deviation in extraversion over the course of the semester (simple $b_1 = .26$, 95% CI [.13, .38]). In contrast, people who wanted to stay the same with respect to extraversion (scale score = 0; standardized score = −1.78) tended to decrease in extraversion over time (simple $b_1 = −.05$, 95% CI [−.09, −.004]).⁶

In contrast to the other four personality dimensions, goals to increase in openness to experience did not moderate growth in trait-openness over time ($b_3 = .02$, 95% CI [−.002, .04]). Taken together, these results suggest that people who desire to increase with respect to any of the Big Five personality dimensions (other than openness to experience) actually tend to experience subsequent increases in their self-reports of that personality trait over time. These findings provide the first evidence that individuals may be capable of volitionally changing their personality traits. Or, at the very least, these findings indicate that people tend to change over time in ways that align with their goals.⁷

It is important to note that one potential alternative explanation for these findings is regression to the mean. Specifically, at Time 1, change goals were negatively correlated with personality traits. As such, people with high desires to increase in agreeableness, for example, were likely to be more disagreeable at Time 1. Therefore, it may simply be the case that disagreeable individuals, for example, are most likely to increase in agreeableness over time—and that their change goals are immaterial. To evaluate this alternative explanation, we reran all analyses, controlling for the appropriate Time 1 personality trait. The pattern of results was unchanged. In other words, goals to increase with respect to each trait predicted actual increases in those traits over time, which could not be explained by regression to the mean/preexisting-trait levels at Time 1.

³ As such, at Time 1, the “month” variable was 0 for all participants. If a participant completed Time 2 (6 days later), their score on the “month” variable for Time 2 would be $6/30 = 0.20$.

⁴ One particularly useful feature of this operationalization of time is that its standard deviation is 1.05, and its range is 3.70. When standardized, the standard deviation of this variable is 1.00 and the range is 3.52. As such, the coefficients reported for the “month” variable were almost always identical (to two decimal places) to the standardized regression coefficients. Therefore, the reader can think of all reported effect sizes as “essentially standardized.”

⁵ The simple slope at one standard deviation above the mean was $b = .06$, 95% CI [.03, .09].

⁶ The simple slope at one standard deviation below the mean was $b = −.02$, 95% CI [−.05, .01].

⁷ To address a reviewer’s concern, we also examined whether change goals predicted quadratic growth in personality traits. With the exception of extraversion, change goals did not predict quadratic growth in any personality trait all ($|b/s| \leq .02$, $ps \geq .11$). In contrast, goals to increase in extraversion predicted quadratic growth in trait extraversion ($b = −.03$, 95% CI [−.05, −.02]). However, this effect did not replicate in Study 2 ($b = −.01$, $p = .50$).

Table 2
 Multilevel Models Predicting Growth in Personality Traits From Change Goals

Predictor	Extraversion			Agreeableness			Conscientiousness			Stability			Openness		
	<i>b</i>	95% CI		<i>b</i>	95% CI		<i>b</i>	95% CI		<i>b</i>	95% CI		<i>b</i>	95% CI	
		LB	UB		LB	UB		LB	UB		LB	UB		LB	UB
Intercept	-.02	-.18	.15	.04	-.13	.20	.02	-.13	.16	-.08	-.23	.07	.00	-.15	.16
Goal (Time 1)	-.08	-.24	.07	-.16	-.31	.01	-.50	-.65	-.36	-.43	-.57	-.28	-.15	-.30	.01
Month	.02	-.001	.04	-.01	-.04	.01	-.02	-.04	.001	.08	.05	.10	.04	.02	.06
Goal × Month	.04	.02	.06	.05	.03	.08	.05	.02	.07	.07	.05	.09	.02	-.002	.04

Note. 95% confidence intervals for regression coefficients in boldface do not contain .00; all personality traits and change goals were standardized before being entered into the model; Goal = change goal; CI = confidence interval; LB = lower-bound; UB = upper-bound.

Generality versus specificity of change goals. Because we measured extraversion along with its six facets, as a secondary series of analyses, we examined the specificity versus generality of change goals. It is possible that goals to change specific facets (e.g., gregariousness) are associated with subsequent changes in only that facet, but not changes in the broader trait (e.g., someone who wants to become more assertive may actually become more assertive over time, but their levels of, for example, cheerfulness, friendliness, and excitement seeking may remain unchanged). Alternatively, it is possible that changes in facets may generalize to broader trait change over time (Jackson et al., 2009). For example, goals to increase in gregariousness might lead to changes in the broader trait of extraversion, above and beyond the impact of goals to increase in global trait extraversion.

To test these ideas, we first examined whether goals to change specific facets predicted subsequent growth in those facets. On average, goals to increase with respect to individual facets predicted subsequent growth in those facets (average $b_3 = .05$).⁸ Next, we tested whether goals to change global extraversion predicted changes in facets, above and beyond goals to change the specific facets. This was accomplished by modeling growth in each facet as a function of goals to change that specific facet, as

well as goals to change extraversion more generally (a composite of goals to change the remaining five facets). On average, goals to increase in global extraversion did not predict growth in specific facets beyond goals to change the specific facets. Finally, we examined whether goals to change each specific facet predicted growth in global trait-extraversion, above and beyond goals to increase in extraversion more generally (averaged across the remaining five facets). This was accomplished by estimating the parameters of six different MLMs. In each model, growth in trait-extraversion was modeled as a function of goals to increase in a single facet (e.g., the composite of the four assertiveness items) and a composite of goals to increase in the remaining five extraversion facets. With the exception of gregariousness, goals to change individual facets did not predict growth in extraversion above and beyond goals to change in global trait-extraversion (average $b = .00$). Goals to increase in gregariousness did, in contrast, predict growth in trait-extraversion above and beyond a composite of goals to change the other five facets ($b_3 = .03$, 95% CI [.001, .05]).

Collectively, these findings suggest that change goals are relatively specific. That is, goals to increase in assertiveness, for example, predicted subsequent growth specifically in assertiveness, but not in global trait-extraversion. Similarly, goals to increase in global extraversion failed to predict growth in specific facets. Of course, these findings do not soundly rule out the possibility that facet-level changes might generalize to trait-level changes (and vice versa). It is possible that changes in facets can generalize to trait change over time, but such a process may be quite gradual and might require considerable time to manifest. Future research should explore this possibility.

Did the Intervention Help People Change?

For our final series of analyses, we examined whether the “change plan” intervention catalyzed trait development. That is, we tested whether people in the intervention group changed according to their desires at a faster rate than did people in the control group. This was accomplished by estimating the interaction between the intervention

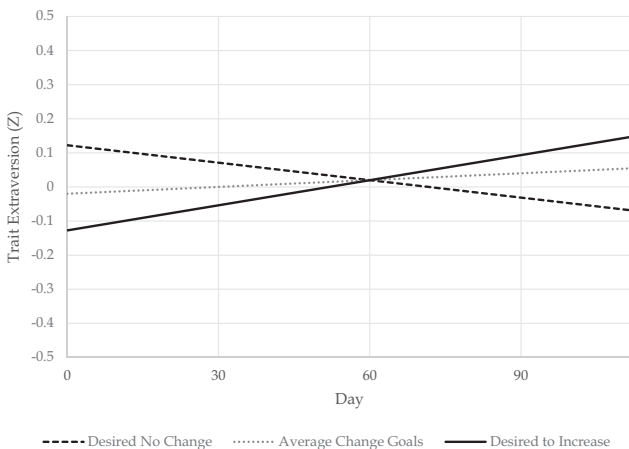


Figure 2. Model predicted growth in extraversion for people who reported goals to increase in extraversion (plotted at “1” on original change goals scale; $z = 1.34$) and for people who reported not wanting to change at all in extraversion (plotted at “0” on original scale; $z = -1.78$). For comparison, the sample average trajectory is also plotted ($z = 0$).

⁸ Coefficients and 95% CIs for activity, assertiveness, cheerfulness, excitement seeking, friendliness and gregariousness, respectively, are as follows: $b = .07$, 95% CI [.03, .10]; $b = .09$, 95% CI [.06, .12]; $b = .06$, 95% CI [.03, .09]; $b = .01$, 95% CI [-.01, .04]; $b = .04$, 95% CI [.02, .07]; and $b = .02$, 95% CI [-.01, .04].

(dummy coded: 0 = control, 1 = intervention) and people's change goals in predicting growth in their personality traits over time.⁹

Unexpectedly, the three-way interaction between the intervention, change goals, and month was either not statistically significant (for extraversion and emotional stability), or it was negative (for agreeableness, conscientiousness, and emotional stability, *bs* ranged from $-.06$ to $-.10$, $ps < .05$). This indicates that for agreeableness, conscientiousness, and emotional stability, the intervention may have actually backfired and inhibited change for people who desired it.

Why was the intervention inert, or, in some cases, deleterious in helping people to attain desired changes to their personality traits? There are at least two potential explanations. With respect to the ineffectiveness of the intervention, it may have been the case that participants were working on changing their personality traits even when they were not asked to do so. During the last week of the semester, we asked all participants (irrespective of wave number or condition) to rate, using a four-point scale, whether "over the course of this semester, have you worked to change any aspect of your personality traits?" There were no differences on responses to this question between the intervention group ($M = 2.69$, $SD = 0.83$) and control group ($M = 2.63$, $SD = 0.77$). This suggests that people want to change their personality traits (see Table 1, and also Hudson & Roberts, 2014), and seem to be working on doing so, even when they are not explicitly asked to do so (e.g., Quinlan et al., 2006; Stevenson & Clegg, 2011). Furthermore, the fact that, across conditions, participants tended to experience changes that aligned with their desires may suggest that people are capable of engendering volitional changes to their personality traits, even without the help of an intervention. As such, the intervention may have been ineffectual simply because people are already somewhat adept at modifying their own traits.

Why might the intervention have backfired in some cases? One possibility is that the goal-setting task was relatively unstructured, and participants were not trained to generate effective plans. Indeed, a brief survey of participants' weekly goals revealed that many students composed ill-specified and amorphous goals, such as "think positive thoughts," "meet new people," "help others," "do what I need to do," "be more organized," or "be more sociable." These types of nonspecific goal intentions are likely to be relatively inefficacious in aiding goal pursuit. Rather, effectively pursuing goals may require generating more specific and attainable "if . . . then" implementation intentions, such as, "If I disagree with something said in class, then I will voice my opinion" (Gollwitzer & Brandstätter, 1997).

Beyond merely being ineffective in aiding goal pursuit, the broad goals that participants authored may have actually inhibited their abilities to attain desired trait changes. A growing body of literature has found that sometimes the very act of declaring a goal (especially publically) is construed by individuals as progress toward that goal, which can undermine motivation to actually pursue the goal (Fishbach, Dhar, & Zhang, 2006; Gollwitzer, Sheeran, Michalski, & Seifert, 2009; Gopinath & Nyer, 2009). Stated differently, merely professing one's intent to achieve a goal may cause people to feel that they have "done something" to progress toward their goal, alleviating felt pressure to continue working toward the goal. As such, it may be the case that participants in the intervention group not only formed ineffective goals, but that authoring those ineffectual goals actually undermined their motivation to make real progress toward changing their traits.

Study 2

In Study 1, we found that participants' goals to change their personality traits predicted subsequent growth in their traits that aligned with their desires. For example, people who wanted to become more extraverted actually tended to increase in self-reported extraversion at a faster rate than did their peers over the course of a 16-week semester. Study 2 was designed to directly replicate Study 1. Beyond this, Study 2 extended Study 1 in three ways.

First, we attempted to improve the intervention from Study 1. Specifically, the "change plan" intervention in Study 1 was, at best, inert and did not help participants change their personality traits in the desired direction. This may have been because participants were not trained to generate effective goal intentions—and, as such, many composed vague, ill-defined goal intentions that are likely to have been impotent (Gollwitzer & Brandstätter, 1997) or even deleterious (Fishbach et al., 2006; Gollwitzer et al., 2009; Gopinath & Nyer, 2009). In Study 2, we attempted to improve the change plan intervention by training participants to generate specific cognitive, affective, and behavioral implementation intentions, which past research suggests are efficacious in promoting goal attainment (Gollwitzer & Brandstätter, 1997).

A second way Study 2 extended Study 1 was that, in addition to rating their personality traits at each wave, participants also provided self-report ratings of their trait-relevant daily behaviors. Measures of daily behavior were collected for three reasons. First, personality traits and trait-relevant daily behavior are only moderately correlated (e.g., Hudson & Roberts, 2014). As such, by examining whether change goals predicted growth in trait-relevant behavior (in addition to growth in personality traits), we could provide a converging test of whether people change in ways that align with their desires. Second, daily behavior checklists are more concrete and less subjective than are trait ratings (e.g., one can more easily and objectively answer "Did you hug someone today?" than "Are you a talkative person?"), and as such, may alleviate some of the concerns of relying solely upon self-report personality trait ratings (e.g., Buss & Craik, 1983; Paulhus & Vazire, 2007). Third, by measuring both traits and behavior, we were able to test several theories about how the change process might occur: Do behaviors change first, leading to trait change (Magidson et al., 2012; Roberts & Jackson, 2008); do traits change first, leading to behavioral change (Costa & McCrae, 2006; Lodi-Smith & Roberts, 2007); or do traits and behaviors change more or less correspondingly (Roberts et al., 2008)?

A third and final way that Study 2 extended Study 1 is that participants' change goals were repeatedly measured—up to three times. This afforded two major benefits. First, collecting multiple measures of participants' change goals allowed us to estimate stability in change goals. This enabled an examination of whether people who

⁹ Participants in the intervention group used binary checkboxes to nominate which personality traits they specifically wanted to work on changing during the study. People tended to nominate traits that they had earlier expressed goals to change while completing the C-BFI (average intradimension $r = .29$). Change goals were used in these analyses, rather than nominated traits, for two reasons. First and most importantly, participants in the control group did not nominate which traits they would like to change, making it impossible to examine the effect of the intervention on nominated traits. Second, the nominations were binary, which would necessarily have less predictive validity than more continuous change goal ratings (Cohen, 1983).

were seeking to increase in extraversion at Time 1, for example, consistently reported goals to increase in extraversion during later waves, as well. Second, theoretically, as people attain desired changes to their personality traits, their goals to increase with respect to those traits should be sated and dissipate (the alternative hypothesis is that people would want to increase in traits ad infinitum; Hudson & Roberts, 2014). For example, imagine a person who wants to become more conscientious. As that individual actually experiences gains in conscientiousness, the goal to continue to increase in conscientiousness should be satisfied and disappear. By collecting multiple measures of change goals, we were able to examine whether growth in traits does, in fact, predict declines in goals to change those traits. If such a process were occurring, it would provide further evidence that people are, in fact, pursuing goals to change their personality traits, and that the goal pursuit process operates in a theoretically meaningful way.

Method

Participants. Recruitment procedures were identical to Study 1. Data were collected from a total of 151 undergraduates in a large, upper-level personality psychology course. This sample size enabled approximately 74% power to detect average-sized zero-order effects. Participants were 56% female, with ages ranging from 18 to 27 years old ($M = 20.10$, $SD = 1.74$). The sample was 54% White, 36% Asian, 8% Hispanic, and 5% Black.

On average, participants provided 10.44 waves of data. Ninety-three percent of the sample ($n = 141$) provided at least two waves of data. At waves 4, 8, 12, and 16, data were provided by 123 (81%), 104 (69%), 78 (52%), and 43 (28%) participants, respectively. Attrition analyses revealed that trait-conscientiousness and conscientious behavior at Time 1 were significantly correlated with number of waves of data provided ($r_s = .22, .23, p_s < .01$). No other traits, change goals, or daily behaviors at Time 1 were associated with number of waves completed (all $|r_s| \leq .12, p_s \geq .14$). The “change plan” intervention was also not significantly correlated with total waves of participation ($r = -.13, p = .10$).

Measures.

Personality traits. At each measurement occasion, the Big Five personality traits (including extraversion) were measured using the BFI. Reliabilities ranged from .78 (openness) to .88 (emotional stability).

Change goals. On waves 1, 7, and 13, participants provided self-report ratings of their goals to change with respect to each of the big-five personality traits (including extraversion) using the C-BFI. Reliabilities ranged from .79 (extraversion) to .84 (conscientiousness).

Daily behavior. At each time point, participants self-reported their daily behavior relevant to each of the Big Five personality dimensions using the Daily Behavior Questionnaire (DBQ; Church et al., 2008). For each of the five personality dimensions, the DBQ contains 10 behaviors. For example, one of the extraverted behaviors is, “In the past 24 hours, I talked a lot.” Participants were instructed to indicate whether they actually performed each behavior within the past 24 hours (and not to think about whether they usually perform each behavior). For each item, participants responded using a binary scale, *yes* (1) and *no* (0).

Behaviors for each dimension were summed for each time point (at Time 1, alphas ranged from .50 [conscientiousness] to .77 [extraversion]). As such, behavior scores could potentially run from 0 to 10 for

each dimension, interpretable as the number of trait-relevant behaviors performed with the 24 hr preceding the measurement occasion.¹⁰

Procedure. The procedure for Study 2 was very similar to Study 1. There were only three differences between Study 1 and Study 2. First, in Study 2, participants rated their daily behavior at each time point, in addition to their personality traits. Second, participants provided ratings of their change goals every six waves (i.e., on waves 1, 7, and 13). This enabled us to examine both the stability of change goals over time, as well as whether growth in personality traits related to declines in change goals over time.

Third and finally, we modified the “change plan” intervention from Study 1 in attempt to increase its efficacy. In Study 1, participants in the treatment condition were given relatively unstructured instructions to generate weekly goals to help them attain their desired personality trait changes. Many participants created extremely vague, nonspecific, nonmeasurable goals, such as, “talk to more people,” “learn to love myself more,” “make plans ahead of time,” “be more thorough in my work,” or “stay organized.” These types of broad goals can be ineffective in aiding goal pursuit. Rather, research suggests that forming more specific implementation intentions, such as, “If I encounter situation X, then I will do Y,” can be more efficacious and lead to higher rates of goal attainment than do vaguer goal intentions (Gollwitzer & Brandstätter, 1997). Thus, during each wave of Study 2, participants in the intervention condition were coached to create very specific and concrete “small steps” (e.g., “Call Andrew and ask him to lunch on Tuesday”) as well as “if . . . then” implementation intentions (e.g., “If I feel stressed, then I will call my mom to talk about it”). Further, they were warned that “broad goals like ‘I want to be more talkative and sociable’ are too vague, and therefore nearly impossible to attain.” The instructions for the control group were identical to those in Study 1.

Results and Discussion

Descriptive statistics and intercorrelations for all study variables at Time 1 are presented in Table 3. As in Study 1, people, on average, expressed goals to increase with respect to each of the Big Five personality traits. As in Study 1, change goals were—on average—negatively related to both personality traits and trait-relevant daily behavior.

Do People Change as Desired?

As in Study 1, prior to all analyses, personality traits, change goals, and behavior were standardized across the entire sample, and time was scaled in terms of months and centered at the first wave. First, we replicated the primary analyses from Study 1, examining whether change goals (at Time 1) moderate growth in personality traits. The parameter estimates from these analyses are

¹⁰ Because participants were given separate radio buttons to indicate that “yes” they had performed each behavior or “no” they had not performed the behavior, “no” responses were separable from missing data. To control for missing data, following Hudson and Roberts (2014), the number of affirmative responses for each dimension was divided by the total number of responses for that dimension, and this number was multiplied by 10. For example, someone who indicated that they had performed four openness behaviors and did not provide a response to 1 item would receive a score of $(4/9 \times 10) = 4.44$ for that day.

Table 3
Study 2 Descriptive Statistics and Correlations at Time 1

Variable	<i>M</i>	<i>SD</i>	Correlations														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Traits																	
1. Extraversion	3.12	0.77	—														
2. Agreeableness	3.73	0.61	.25	—													
3. Conscientiousness	3.40	0.62	.12	.14	—												
4. Stability	3.04	0.81	.33	.17	.31	—											
5. Openness	3.59	0.53	.19	.12	.06	.06	—										
Change Goals																	
6. Extraversion	0.67	0.49	− .42	.16	−.08	−.15	−.08	—									
7. Agreeableness	0.90	0.51	−.09	.04	−.06	−.12	.10	.32	—								
8. Conscientiousness	0.89	0.56	−.14	.06	− .43	− .19	.11	.47	.50	—							
9. Stability	0.88	0.56	− .29	.01	− .18	− .51	.02	.47	.36	.55	—						
10. Openness	0.70	0.40	− .19	.04	−.07	−.03	−.02	.43	.40	.55	.44	—					
Behavior																	
11. Extraversion	6.25	2.58	.47	.17	.04	.17	.04	− .17	.07	.04	−.05	.00	—				
12. Agreeableness	7.89	1.93	−.07	.29	.15	.01	.01	.06	.01	−.05	.01	.05	− .33	—			
13. Conscientiousness	6.54	1.86	−.01	.05	.51	.10	.01	.05	.14	−.11	.06	.10	.06	.05	—		
14. Stability	5.54	2.56	.18	.10	.21	.52	.04 − .17	−.10	− .17	− .41	.02	−.07	.34	.13	—		
15. Openness	3.85	2.02	.12	.00	.07	.01	.28	−.08	.06	.02	.01	.02	.29	− .37	.01	− .29	—

Note. 95% confidence intervals for correlations in boldface do not contain .00.

presented in Table 4A. In terms of mean-level change, participants tended to increase in extraversion ($b_1 = .04$, 95% CI [.02, .05]) and emotional stability ($b_1 = .06$, 95% CI [.04, .08]) each month. In contrast, they tended to experience decreases in agreeableness ($b_1 = -.02$, 95% CI [−.05, −.002]). There were no statistically significant mean-level changes in conscientiousness ($b_1 = -.01$, 95% CI [−.03, .01]) or openness to experience ($b_1 = .01$, 95% CI [−.02, .03]).

Replicating Study 1, people's change goals significantly moderated growth in their personality traits over time for all five personality dimensions: extraversion ($b_3 = .08$, 95% CI [.06, .09]), agreeableness ($b_3 = .02$, 95% CI [.001, .05]), conscientiousness ($b_3 = .05$, 95% CI [.03, .07]), emotional stability ($b_3 = .05$, 95% CI [.03, .07]), and openness to experience ($b_3 = .03$, 95% CI [.01, .05]). These interactions indicate that people who had higher goals to change with respect to any of the Big Five personality dimensions experienced greater changes in the desired direction, as compared with their peers who expressed lesser change goals. As in Study 1, controlling for Time 1 traits did not affect the pattern of results, ruling out regression to the mean as an alternative explanation for these findings.

Extending beyond Study 1, we triangulated these findings by also examining whether people's daily behaviors for each personality trait changed in ways that aligned with their desires (see Table 4B). Consistent with the trait findings, change goals significantly moderated growth in trait-relevant behavior for extraversion ($b_3 = .04$, 95% CI [.002, .07]), agreeableness ($b_3 = .05$, 95% CI [.01, .08]), and emotional stability ($b_3 = .09$, 95% CI [.05, .12]). In contrast, change goals did not moderate growth in conscientiousness ($b_3 = .00$, 95% CI [−.04, .04]) or open behaviors ($b_3 = .02$, 95% CI [−.02, .05]).¹¹ These findings suggest that—not only do people's self-reported personality traits change in the desired direction—their daily behaviors also change in ways that align with their desires.

Volitional Change Processes

In our next series of analyses, we tested several (nonmutually exclusive) theories about how volitional change processes might occur. Several scholars have argued that if people can change their patterns of thoughts, feelings, and behaviors for a long enough period of time, those new patterns can crystalize into enduring trait change (Burke, 2006; Magidson et al., 2012; Roberts & Jackson, 2008). If such a process were occurring, we might expect daily behaviors to mediate the relationship between change goals and growth in traits over time (i.e., change goals lead to growth in behavior, which in turn leads to trait change). Alternatively, other scholars have postulated that commitment to new identities (e.g., being a responsible worker) might facilitate changes in patterns of thoughts, feelings, and behaviors—and ultimately traits (Lodi-Smith & Roberts, 2007; Roberts & Wood, 2006). To the extent that personality trait measures (which ask people “how do you see yourself?”) are sensitive to identity changes, self-reported traits would be expected to mediate any links between change goals and growth in behaviors (i.e., change goals lead to growth in traits, which in turn lead to behavioral change).

First, we tested whether behaviors mediated the relationship between change goals and growth in traits. Following the statistical procedures recommended by Bolger and Laurenceau (2013) and Bauer and colleagues (2006), we estimated the effect of change goals on growth in behavior, “ a ” ($[\text{Behavior}]_{ij} = b_0 + b_1[\text{Change-}$

¹¹ Why did change goals fail to predict growth in behaviors for conscientiousness and openness? We believe this is likely attributable to sampling error and low power to detect effects. As an analog, goals to increase in openness failed to statistically significantly predict growth in trait-openness in Study 1 ($b = .02$, 95% CI [−.002, .04]), yet were significant predictors of growth in openness in Study 2 ($b = .03$, 95% CI [.01, .05]). Notably, the estimates of this effect did not significantly differ between Studies 1 and 2.

Table 4A
Multilevel Models Predicting Growth in Personality Traits from Change Goals

Predictor	Extraversion			Agreeableness			Conscientiousness			Stability			Openness		
	<i>b</i>	95% CI		<i>b</i>	95% CI		<i>b</i>	95% CI		<i>b</i>	95% CI		<i>b</i>	95% CI	
		LB	UB		LB	UB		LB	UB		LB	UB		LB	UB
Intercept	-.04	-.18	.11	.04	-.11	.20	-.07	-.22	.08	-.09	-.22	.04	.00	-.16	.16
Goal (Time 1)	-.39	-.52	-.25	.00	-.16	.15	-.42	-.57	-.28	-.62	-.75	-.49	-.02	-.17	.13
Month	.04	.02	.05	-.02	-.05	-.002	-.01	-.03	.01	.06	.04	.08	.01	-.02	.03
Goal × Month	.08	.06	.09	.02	.001	.05	.05	.03	.07	.05	.03	.07	.03	.01	.05

Note. 95% confidence intervals for regression coefficients in boldface do not contain .00; all personality traits and change goals were standardized before being entered into the model; Goal = change goal; CI = confidence interval; LB = lower-bound; UB = upper-bound.

Goals]_{*j*} + *b*₂[Month]_{*ij*} + *a*[Change-Goals]_{*j*}[Month]_{*ij*} + *U*_{*j*} + ε_{*ij*}), as well as the downstream effect of behavior on traits, “*b*” ([Trait]_{*ij*} = *b*₀ + *b*[Behavior]_{*ij*} + *b*₁[Change-Goals]_{*j*} + *b*₂[Month]_{*ij*} + *c*[Change-Goals]_{*j*}[Month]_{*ij*} + *U*_{*j*} + ε_{*ij*}), in a single MLM (see Bauer et al. [2006] and Bolger and Laurenceau [2013] for a detailed description of the procedure). Standard formulas were used to compute the fixed indirect effects (*ab* = *a* × *b*) and 95% CIs (*ab* ± 1.96[*a*²σ_{*b*}² + *b*²σ_{*a*}² + σ_{*a*}²σ_{*b*}²]^{1/2}) (Bauer et al., 2006; Kenny, Korchmaros, & Bolger, 2003). As a note regarding the interpretation of the indirect effects, in ordinary least-squares regression, the indirect effect (*ab*) is equivalent to the reduction in the relationship between predictor and outcome when the mediator is controlled (*c* – *c*′) (MacKinnon, Fairchild, & Fritz, 2007).¹² Although this is not strictly true for multilevel models, with large sample sizes, the differences between the indirect effect (*ab*) and the reduction in the association between the predictor and the outcome when the mediator is controlled (*c* – *c*′) are trivial (Krull & MacKinnon, 2001).

Do behaviors mediate the effect of change goals on growth in personality traits? As can be seen in Table 5A, fluctuations in trait-relevant behavior mediated the impact of change-goals on monthly growth in extraversion (*ab* = .003, 95% CI [.001, .01]), agreeableness (*ab* = .01, 95% CI [.001, .01]), and emotional stability (*ab* = .01, 95% CI [.01, .02]), but not conscientiousness (*ab* = .000, 95% CI [–.004, .004]) or openness to experience (*ab* = .001, 95% CI [–.003, .01]). These indirect effects are consistent with the theory that individuals might be attaining changes to their personality traits partially by modifying their patterns of trait-relevant behavior (Burke, 2006; Magidson et al., 2012; Roberts & Jackson, 2008). For example, people who want to increase in extraversion may modify their thoughts, feelings, and behavior to be more extraverted—which in turn may calcify into lasting increases in trait-extraversion.

To check the robustness of this mediational link, we also examined the lagged effect of behavior on traits at a later time point, controlling for previous trait levels, change goals, month, and the Change Goals × Month. As can be seen in the left-hand column of Table 5C, behavior at previous waves predicted current traits, above and beyond previous trait levels for all dimensions except agreeableness (all *b*s ≥ .03, 95% CIs ranged from [.01, .05] to [.03, .10]). These analyses provide further support for the notion that deviations in behaviors predict subsequent changes in traits.

Do traits mediate the effect of change goals on growth in behavior? Next, we tested whether deviations in personality traits mediate the relationship between change goals and growth in

trait-relevant daily behavior. As can be seen in Table 5B, deviations in personality traits mediated the association between change goals and growth in trait-relevant behavior for extraversion (*ab* = .02, 95% CI [.01, .04]), conscientiousness (*ab* = .02, 95% CI [.01, .03]), and emotional stability (*ab* = .03, 95% CI [.01, .05]), but not for agreeableness (*ab* = .01, 95% CI [–.002, .01]) or openness (*ab* = .01, 95% CI [–.001, .01]). These findings are consistent with theoretical notions that people who want to become more extraverted, for example, construct a new, more-extraverted identity, which in turn leads to increases in extraverted thoughts, feelings, and behaviors (Lodi-Smith & Roberts, 2007; Roberts & Wood, 2006). As with the behavior mediation analyses, we checked the robustness of these findings by predicting behavior from personality traits at the previous time-point, controlling for previous levels of behaviors, change goals, month, and the Change Goals × Month interaction. As can be seen in the right-hand column of Table 5C, personality traits predicted subsequent increases in trait-relevant behavior for all five personality dimensions (*b*s ≥ .15, 95%), CIs ranged from [.08, .21] to [.19, .34].

These findings indicate that two seemingly opposing processes may be occurring simultaneously. On the one hand, it appears that changes in trait-relevant behaviors may be leading to subsequent changes in traits themselves. This possibility has been anticipated by various scholars who have argued that enduring changes in thoughts, feelings, and behaviors (i.e., personality states) have the potential to calcify into lasting personality trait change (e.g., Burke, 2006; Magidson et al., 2012; Roberts & Jackson, 2008). As such, it may be the case that people who want to become more extraverted, for example, tend to adopt more extraverted patterns of thoughts, feelings, and behavior—which in turn lead to changes in their trait-levels of extraversion. On the other hand, it is possible that changes in personality traits can facilitate subsequent changes in behavior too. Indeed, some scholars have argued that personality trait change is akin to changes in self-construal and identity (Lodi-Smith & Roberts, 2007; Roberts & Wood, 2006). These identity-level changes may guide changes in behavior.

The data reported here provide evidence for both personality processes. Indeed, there is no reason to assume they are mutually exclusive; it is possible that changes in personality traits and changes in daily behaviors are corresponsive (Roberts et al., 2008). That is, changes in personality traits may foster changes in daily

¹² In this case, *c* refers to [Trait]_{*ij*} = *b*₀ + *b*₁[Change-Goals]_{*j*} + *b*₂[Month]_{*ij*} + *c*[Change-Goals]_{*j*}[Month]_{*ij*} + *U*_{*j*} + ε_{*ij*}.

Table 4B
Multilevel Models Predicting Growth in Trait-Relevant Behavior From Change Goals

Predictor	Extraversion			Agreeableness			Conscientiousness			Stability			Openness		
	<i>b</i>	95% CI		<i>b</i>	95% CI		<i>b</i>	95% CI		<i>b</i>	95% CI		<i>b</i>	95% CI	
		LB	UB		LB	UB		LB	UB		LB	UB		LB	UB
Intercept	.16	.03	.28	-.13	-.26	.01	-.02	-.14	.10	-.22	-.34	-.10	.07	-.06	.20
Goal (Time 1)	-.18	-.30	-.06	-.02	-.15	.11	-.09	-.21	.03	-.41	-.53	-.29	.03	-.09	.16
Month	-.08	-.11	-.04	.06	.02	.09	-.01	-.05	.02	.12	.08	.15	-.02	-.05	.02
Goal × Month	.04	.002	.07	.05	.01	.08	.00	-.04	.04	.09	.05	.12	.02	-.02	.05

Note. 95% confidence intervals for regression coefficients in boldface do not contain .00; all behaviors and change goals were standardized before being entered into the model; Goal = change goal; CI = confidence interval; LB = lower-bound; UB = upper-bound.

behavior, which in turn promote further changes to personality traits.

Did the Modified Intervention Help People Change?

For our next series of analyses, we examined whether the modified “change plan” intervention helped people attain the desired changes to their personality traits. As can be seen in Table 6, there was a significant interaction between change goals and the intervention (dummy coded: 0 = control, 1 = intervention) in predicting growth in personality traits for extraversion ($b = .04$, 95% CI [.01, .08]), conscientiousness ($b = .08$, 95% CI [.04, .12]), and emotional stability ($b = .06$, 95% CI [.02, .10]), but not for agreeableness ($b = -.02$, 95% CI [-.07, .02]) or openness ($b = -.01$, 95% CI [-.06, .04]).¹³

Figure 3 depicts this interaction for growth in trait extraversion. As can be seen in the left panel of Figure 3, for people who expressed goals to increase in extraversion (scale score = 1, standardized score = .67), the intervention facilitated growth in trait-extraversion (simple Intervention × Month $b = .06$, 95% CI [.02, .11]). The interpretation for this coefficient is that, over the course of a month, a person in the treatment group who wished to become more extraverted increased .06 standard deviations more than did a person in the control group who expressed identical

goals to increase in extraversion. A different way to conceptualize this simple slope is to note that over the course of the 16-week (3.72 month) semester, participants in the control group who wanted to become more extraverted were predicted to increase about one fifth of a standard deviation in extraversion (simple $b_t = .21$, 95% CI [.11, .32]). In contrast, participants in the intervention group who wanted to become more extraverted were predicted to increase nearly one half standard deviation over the course of the semester (simple $b_t = .45$, 95% CI [.34, .57])—a full quarter standard deviation more than their peers in the control group (simple Treatment × Semester $b = .24$, 95% CI [.08, .40]).

As can be seen in the right-hand panel of Figure 3, for people who wished to stay the same with respect to extraversion (scale score = 0, standardized score = -1.43), the intervention had no impact on growth in extraversion (simple Intervention × Month $b = -.02$, 95% CI [-.09, .04]).

Taken together, these findings indicate that the intervention was effective in helping people attain desired changes to their levels of extraversion, conscientiousness, and emotional stability (but not necessarily helpful in attaining changes to agreeableness and openness). Why was the intervention successful in Study 2, but not in Study 1? In Study 1, participants were not coached on how to generate effective goal intentions. Many participants generated vague, immeasurable goals, such as “be more sociable”—which are likely to be unhelpful in aiding goal pursuit (Gollwitzer & Brandstätter, 1997). In Study 2, participants were coached to create specific, “if . . . then” implementation intentions to help them attain desired changes to their personality traits. Mirroring previous research (e.g., Gollwitzer & Brandstätter, 1997), it seems that generating implementation intentions truly helped participants at-

Table 5A
Indirect Effects of Change Goals on Growth in Traits, Mediated by Behavior

Outcome	Indirect Effect				Direct Effect of Goals on Growth in Trait, Controlling Behavior		
	<i>ab</i>	<i>SE</i>	95% CI		<i>c'</i>	95% CI	
			LB	UB		LB	UB
Extraversion	.003	.001	.001	.01	.07	.04	.10
Agreeableness	.01	.002	.001	.01	.02	-.004	.06
Conscientiousness	.000	.002	-.004	.004	.05	.02	.09
Stability	.01	.003	.01	.02	.04	.01	.07
Openness	.001	.002	-.003	.01	.03	-.01	.06

Note. 95% confidence intervals for regression coefficients in boldface do not contain .00; all personality traits, behaviors, and change goals were standardized before being entered into the model; CI = confidence interval; LB = lower-bound; UB = upper-bound.

¹³ Reviewers requested that we also examine whether the traits that participants in the treatment group nominated to specifically work on changing predicted subsequent growth in those traits. Because only participants in the treatment group ($n = 76$) were able to nominate traits, power to detect even average-sized effects was extremely low (~44%). This problem was compounded by the fact that the trait nominations were binary, which reduces power even further as compared with continuous ratings (Cohen, 1983). Nevertheless, trait nominations predicted subsequent growth in extraversion ($b = .04$, 95% CI [.02, .07]), agreeableness ($b = .03$, 95% CI [.01, .05]), and emotional stability ($b = .03$, 95% CI [.01, .06]). The effects for conscientiousness ($b = .02$, 95% CI [-.01, .05]) and openness ($b = .01$, 95% CI [-.02, .04]) were in the correct direction, but we likely lacked sufficient statistical power to detect them.

tain their goals to change their personality traits, as compared with the vague goals participants tended to generate in Study 1.¹⁴

Of particular importance, the fact that the intervention was effective in fostering trait growth provides strong experimental support for the idea that people can volitionally change their own personality traits. Any number of spurious factors could have been driving the observed correlation between change goals and subsequent growth in traits observed in Studies 1 and 2. However, the fact that a randomized intervention boosted growth in personality traits cannot be explained as being incidental. Rather, these findings are most consistent with the idea that people can, in fact, volitionally change their own personality traits, and that the change process can be facilitated by appropriate, well-designed psychological interventions.

Stability and Change in Change Goals

For our final series of analyses, we examined stability and change in change goals. Change goals were assessed at Time 1 ($n = 151$), Time 7 ($n = 109$), and Time 13 ($n = 71$). Because each wave was an average of one week apart, the lag between consecutive assessments of change goals was approximately 6 weeks. As can be seen in Table 7, change goals were moderately stable across time. Indeed, we would not necessarily expect them to be highly stable because, as desired change is attained, the goal to change should dissipate. For example, imagine a person who wants to become more extraverted. As that individual successfully increases his or her level of extraversion, the goal to become more extraverted should be sated and disappear (the alternative would be wanting to increase in extraversion ad infinitum; Hudson & Roberts, 2014).

To examine this possibility, we modeled people's change goals at each time point as a function of (1) the relevant Time-1 personality trait, (2) the change in that personality trait from Time-1 (i.e., their Time-1 centered personality trait), and (3) a random intercept to control for within-person dependencies in the data. As can be seen in Table 8, as people increased in extraversion, conscientiousness, or emotional stability, their change goals with respect to those specific traits tended to decrease ($\beta_s = -.17, -.07$, and $-.07$,

Table 5B
Indirect Effects of Change Goals on Growth in Trait-Relevant Behavior, Mediated by Traits

Outcome	Indirect Effect				Direct Effect of Goals on Growth in Behavior, Controlling Traits		
	<i>ab</i>	<i>SE</i>	95% CI		<i>c'</i>	95% CI	
			LB	UB		LB	UB
Extraversion	.02	.01	.01	.04	.01	-.02	.04
Agreeableness	.01	.004	-.002	.01	.05	.02	.08
Conscientiousness	.02	.01	.01	.03	-.02	-.05	.01
Stability	.03	.01	.01	.05	.05	.02	.08
Openness	.01	.003	-.001	.01	.01	-.03	.04

Note. 95% confidence intervals for regression coefficients in boldface do not contain .00; all personality traits, behaviors, and change goals were standardized before being entered into the model; CI = confidence interval; LB = lower-bound; UB = upper-bound.

Table 5C
Lagged Effects of Traits on Behavior, and Behavior on Traits

Domain	Trait = Behavior _{T-1}			Behavior = Trait _{T-1}		
	<i>b</i>	95% CI		<i>b</i>	95% CI	
		LB	UB		LB	UB
Extraversion	.04	.02	.07	.26	.19	.34
Agreeableness	.02	-.01	.04	.15	.08	.22
Conscientiousness	.04	.01	.07	.24	.16	.31
Stability	.03	.01	.05	.18	.10	.26
Openness	.07	.03	.10	.15	.08	.21

Note. 95% confidence intervals for regression coefficients in boldface do not contain .00; all personality traits, behaviors, and change goals were standardized before being entered into the model; CI = confidence interval; LB = lower-bound; UB = upper-bound.

respectively; 95% CIs [-.24, -.10], [-.13, -.01], and [-.14, -.01], respectively). These findings are consistent with the idea that as people attain desired changes to their personality traits, the desires to change are satisfied, and people experience reductions in their desires to continue increasing with respect to those traits (Hudson & Roberts, 2014). These findings are important because they demonstrate that change goals and the process of trait-growth operate in theoretically meaningful ways. This lends even stronger support for the idea that people are actually able to volitionally change their personality traits (rather than some spurious or incidental process occurring).

General Discussion

Previous research has found that most people want to change at least some aspects of their personalities (Hudson & Roberts, 2014). In fact, to this end, Americans spend tens of billions of dollars each year on self-help programs that promise changes to personality traits such as conscientiousness, sociability, and emotional stability (Linder, 2009). Beyond widespread and enduring lay interest in changing one's own traits, psychologists have argued for more than 20 years that such self-initiated change might be an important mechanism for personality development (Baumeister, 1994; Kiecolt, 1994).

Despite the widespread popular and scientific appeal of volitional trait change, no previous studies have explicitly tested whether people can attain desired changes to their personalities. In the present research, we addressed this possibility in two 16-week longitudinal studies. Our data provide the first evidence that, in general, people want to change their personality traits, and more important, they may be actually able to do so. We review our

¹⁴ Why then, was the intervention ineffective in facilitating growth in agreeableness and openness to experience? At this point, we can only speculate. However, one potential explanation is that far fewer participants were actively working on trying to increase in agreeableness and openness. In the treatment group, approximately 50% of participants nominated extraversion, conscientiousness, and emotional stability as traits they wanted to actively work on changing. In contrast, only 23% of intervention participants nominated agreeableness, and only 34% nominated openness. The fact that few participants were actively trying to change agreeableness and openness may explain why the intervention had essentially no impact on growth in either of these traits (but notably, it also did not "backfire" or reduce growth in either of the traits).

Table 6
Multilevel Model Predicting Growth in Traits From Intervention

Predictor	Extraversion			Agreeableness			Conscientiousness			Stability			Openness		
	<i>b</i>	95% CI		<i>b</i>	95% CI		<i>b</i>	95% CI		<i>b</i>	95% CI		<i>b</i>	95% CI	
		LB	UB		LB	UB		LB	UB		LB	UB		LB	UB
Intercept	.01	-.20	.22	.05	-.17	.27	-.12	-.33	.08	-.16	-.34	.02	.04	-.18	.27
Goal	-.36	-.55	-.16	.18	-.05	.40	-.15	-.38	.07	-.60	-.77	-.43	-.08	-.30	.13
Month	.02	-.01	.04	-.01	-.04	.02	.01	-.02	.04	.06	.03	.08	.02	-.01	.05
Tx	-.10	-.39	.19	-.01	-.32	.30	.11	-.18	.40	.14	-.12	.40	-.09	-.40	.23
Goal × Month	.06	.04	.08	.03	.00	.06	.01	-.02	.04	.03	.01	.06	.03	.00	.07
Goal × Tx	-.07	-.35	.21	-.34	-.64	-.03	-.48	-.77	-.18	-.05	-.31	.21	.13	-.18	.44
Month × Tx	.04	.00	.07	-.03	-.07	.02	-.04	-.08	.00	.01	-.03	.05	-.04	-.08	.01
Goal × Month × Tx	.04	.01	.08	-.02	-.07	.02	.08	.04	.12	.06	.02	.10	-.01	-.06	.04

Note. 95% confidence intervals for regression coefficients in boldface do not contain .00; all personality traits and change goals were standardized before being entered into the model; Goal = change goal; Tx = change plan intervention treatment (dummy coded 1 = treatment, 0 = control); CI = confidence interval; LB = lower-bound; UB = upper-bound.

findings in more depth and expand on their implications for theory and research in the sections that follow.

Can People Volitionally Change Their Personality Traits?

Collectively, our studies indicate that people may be able to successfully attain desired changes to their personality traits. Across both 16-week studies, people's goals to change their personality traits predicted subsequent growth in the desired direction. For example, people who wanted to become more extraverted tended to experience greater subsequent increases in trait-extraversion over the course of the semester than did their peers who desired less change. In Study 2, we replicated these findings and examined them in more depth by also assessing daily behaviors. For example, we found that people who expressed goals to become more extraverted also exhibited

increases in extraverted daily behaviors (e.g., "I smiled and laughed with others," "I mixed well at a social function") over the course of the semester. Collectively, these findings indicate that, at the very least, people's personality traits and daily behavior tend to change in ways that align with their goals for change. Moreover, as participants attained the trait changes that they desired, their goals to increase with respect to those traits tended to decrease. This is consistent with the idea that people were actually pursuing trait change and fulfilling their goals.

Can Interventions Help People Change?

We also tested two slightly different randomized goal-setting interventions which were designed to help facilitate the volitional change process. In Study 1, participants were given a relatively unstructured goal-setting task in which they were asked to "list 3

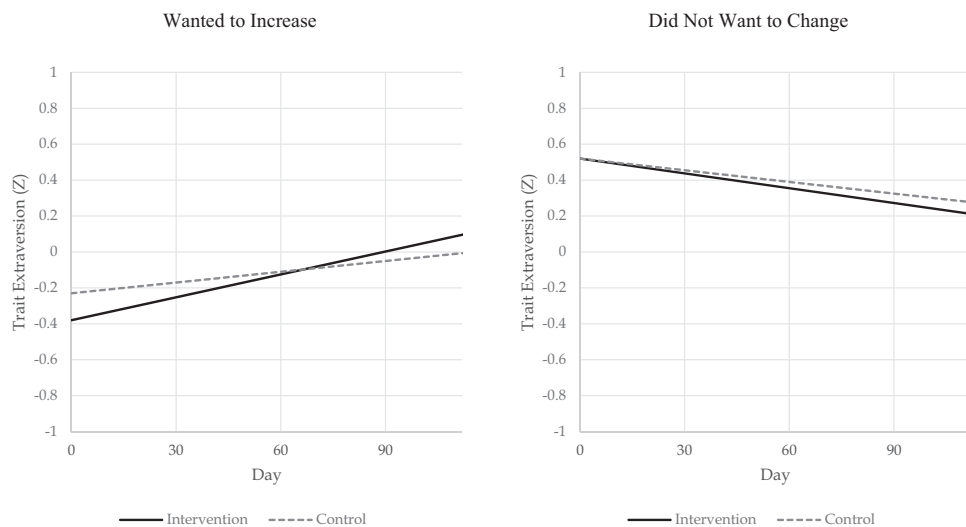


Figure 3. Model-predicted growth in extraversion for people with goals to increase in extraversion (scale score = 1; $z = 0.67$) and people who expressed the goal to "stay the same" with respect to extraversion (scale score = 0; $z = -1.43$) in the intervention and control groups.

Table 7
Test–Retest Stability in Change Goals

Time	Extraversion			Agreeableness			Conscientiousness			Stability			Openness		
	T1	T7	T13	T1	T7	T13	T1	T7	T13	T1	T7	T13	T1	T7	T13
T1	—			—			—			—			—		
T7	.62	—		.59	—		.65	—		.57	—		.48	—	
T13	.47	.73	—	.48	.72	—	.44	.63	—	.61	.70	—	.58	.69	—

Note. 95% confidence intervals for correlations in boldface do not contain .00; for correlations between T1 and T7, $n = 109$; for correlations including T13, $n = 71$.

ways that you can try to attain the changes you desire over the next week.” This intervention did not help participants change their personality traits. This was likely due to the fact that many participants generated amorphous, unattainable goals, such as “do what I need to do,” or “be more sociable.” Previous research suggests that such vague goal intentions are likely to be ineffective (Gollwitzer & Brandstätter, 1997) or even deleterious for goal pursuit (e.g., Fishbach et al., 2006; Gollwitzer et al., 2009). As such, in Study 2, we explicitly trained participants to generate specific implementation intentions each week (see Gollwitzer & Brandstätter, 1997). This kind of intervention was effective in helping people attain desired changes to their personality traits. That is, people in the intervention group in Study 2 tended to experience much greater changes with respect to extraversion, conscientiousness, and emotional stability than did their peers in the control group.

It is important to note that the fact that the intervention catalyzed trait change in Study 2 provides strong experimental support for the idea that people can volitionally change their own personality traits. As with all correlational data, the observed associations between change goals and subsequent trait growth (in both Studies 1 and 2) were not necessarily causal—and are potentially attributable to unspecified third variables. However, the effect of the randomized intervention on trait growth is more difficult to explain via unmeasured third variables. We believe that the most parsimonious explanation for this finding is that people can change their personality traits, and that the intervention in Study 2 was efficacious in catalyzing the change process.

It is important to note, however, that participants in our studies experienced only moderate changes in their personality traits over the course of the semester. Averaging across all five personality traits in both studies, participants who expressed high (one standard deviation above the mean) desires to increase with respect to any trait tended to increase .05 standard deviations in that trait per month, relative to their peers—amassing to .17 standard deviations of greater cumulative change than their peers over the course of the entire study. Even with the aid of an effective intervention in Study 2, participants with high change goals were predicted to increase a maximum of about one-half standard deviation in desired traits over the full semester. Indeed, we would not necessarily expect to observe dramatic changes to individuals’ personality traits over such a brief period of time. Over longer periods of time, it is perhaps theoretically possible that large cumulative volitional changes to one’s own traits might occur. However, it is also possible that individuals might experience diminishing returns in attempting to change their traits over extended periods of time.

Along these lines, it is important to note that—although individuals with relatively higher change goals tended to experience greater subsequent trait growth relative to their peers—the average participant in our studies expressed goals to increase with respect to each personality dimension, yet, averaging across all five traits, the mean-level growth observed in our studies was quite small (.02 standard deviations per month). This finding may indicate that, on the group level, change goals operate relative to other factors that also influence the mean-level growth in personality traits; or it may indicate that stronger-than-average change goals are necessary to catalyze trait change. Future research should explore these possibilities with extended longitudinal designs spanning the course of several years.

Mechanisms of Volitional Trait Change

In Study 2, we also tested two nonmutually exclusive theoretical processes through which idiosyncratic personality trait changes are thought to occur. First, several scholars have argued that, when maintained for an extended period of time, changes in state-level patterns of thoughts, feelings, and behaviors can calcify into abiding personality trait change (Burke, 2006; Magidson et al., 2012; Roberts & Jackson, 2008). Supporting this notion, we found that deviations in daily behavior partially mediated the impact of change goals on growth in personality traits over time. That is, goals to increase in extraversion, for example, predicted growth in daily behavior, which in turn predicted trait changes. This finding was corroborated by analyses which showed that daily behavior at previous time points also predicted subsequent changes in traits, above and beyond the effect of previous trait levels. Collectively, these findings are consistent with the notion that people may be able to engender volitional trait change partially by changing their daily patterns of thoughts, feelings, and behaviors.

Second, other researchers have argued that changes to how people construe their social identities can lead to changes in patterns of thoughts, feelings, and behaviors—and ultimately trait change (Lodi-Smith & Roberts, 2007; Roberts & Wood, 2006).¹⁵ Supporting this idea, we also found that deviations in personality trait measures (which partially tap identity, with items that assess

¹⁵ One complexity inherent to this explanation is that people’s self-reports of their personality traits are tightly intertwined with—and perhaps inseparable from—their identities (Roberts & Wood, 2006). As such, it is difficult to differentiate the impact of identity shifts on behavioral changes versus trait shifts causing behavioral changes.

Table 8
Multilevel Model Predicting Change Goals From Change in Traits

Predictor	Goals to Change with Respect to														
	Extraversion			Agreeableness			Conscientiousness			Stability			Openness		
	β	95% CI		β	95% CI		β	95% CI		β	95% CI		β	95% CI	
	LB	UB	LB	UB	LB	UB	LB	UB	LB	UB	LB	UB	LB	UB	
Trait (Time 1)	-.43	-.58	-.29	.04	-.11	.18	-.42	-.54	-.29	-.56	-.68	-.45	-.04	-.18	.10
Change in Trait	-.17	-.24	-.10	.04	-.03	.10	-.07	-.13	-.01	-.07	-.14	-.01	-.04	-.10	.02

Note. 95% confidence intervals for regression coefficients in boldface do not contain .00; all personality traits and change goals were standardized before being entered into the model; CI = confidence interval; LB = lower-bound; UB = upper-bound.

how participants “see” themselves) mediated the impact of change goals on growth in behavior over time. Stated differently, goals to increase in conscientiousness, for example, predicted increases in trait-conscientiousness, which in turn predicted behavioral changes. Corroborating these findings, traits at previous time points predicted subsequent changes in trait-relevant behavior, above and beyond and effects of behavior at previous time points.

Taken together, these results suggest that volitional personality trait change may occur through a conjunction of multiple processes. People who want to increase in extraversion, for example, may simultaneously modify their behavior to be more extraverted and also begin to adopt a more extraverted social identity—seeing themselves as more extraverted. It may be the case that these two processes mutually catalyze each other in a corresponsive (Roberts et al., 2008) fashion. That is, changes in behavior may lead to changes in people’s self-reported personality traits (how they see themselves; Magidson et al., 2012; Roberts & Jackson, 2008), which in turn may lead to changes in behavior (Lodi-Smith & Roberts, 2007; Roberts & Wood, 2006).

Theoretical and Practical Implications

The present research has numerous implications for understanding personality development, as well as several practical implications. With respect to personality development, our studies suggest that people may be able to volitionally change their personality traits. As such, it is possible that the normative increases in agreeableness, conscientiousness, and emotional stability that occur over the life course (e.g., Bleidorn et al., 2009; Lucas & Donnellan, 2011; Roberts & Mroczek, 2008; Roberts et al., 2006, 2008; Soto et al., 2011) may be partially driven by the fact that people want to increase in those traits and are actively working on doing so. There are at least two ways future research could test this idea. First, using cross-sectional designs, researchers could examine age trajectories in change goals. For example, previous research has found that trait openness to experience follows a negative curvilinear trajectory over the life course—increasing over the first few decades of life before leveling off and decreasing in old age (Roberts & Mroczek, 2008). If trait development follows change goals, we might expect young people to endorse goals to increase in openness to experience, and for those goals to dissipate in the decades of life preceding the normative plateau and decline in openness. Second and more ideally, studies tracking traits and change goals longitudinally over the course of decades would

provide the strongest support for the notion that change goals partially drive normative developmental trends.

Beyond theory, our findings have numerous practical applications. First, our studies suggest that people can change their personality traits, merely because they desire to do so. Recently, the idea that personality traits can be altered through interventions has been garnering increasing amounts of empirical attention (e.g., Jackson et al., 2012; Magidson et al., 2012; Tang et al., 2009). Generally, these studies have examined how programs or interventions can influence the development of people’s personalities, independently of participants’ desires to change themselves. It is possible that the efficacy of such interventions could be increased by working to align participants’ desires with the goals of the intervention. For example, the effectiveness of interventions to increase openness to experience (e.g., Jackson et al., 2012) might be augmented by first instilling within participants the desire to increase in openness to experience. As such, future research should explore (1) whether participants’ change goals moderate or mediate the efficacy of existing interventions, (2) whether participants’ change goals can be manipulated (especially long-term), and (3) whether manipulating change goals can catalyze existing interventions.

A second practical application of our findings involves intervention methodologies. Our studies suggest that training participants to generate concrete, specific plans (e.g., “Ask Julie to get coffee Thursday afternoon”) and “if . . . then” implementation intentions (e.g., “If I feel upset by something my roommate says, then I will tell him how I feel”) can maximize—and, in some cases, double—the amount of trait change that they experience in the desired direction (see Gollwitzer & Brandstätter, 1997). In contrast, interventions that do not provide participants with sufficient structure and training in how to formulate effective implementation intentions have the potential to backfire and undermine change (Fishbach et al., 2006; Gollwitzer & Brandstätter, 1997; Gopinath & Nyer, 2009).

That being said, we did not systematically explore which types of implementation intentions were most effective in catalyzing change. Mediation analyses revealed that, in general, changes to patterns of thoughts, feelings, and behaviors may partially drive trait change (Burke, 2006; Magidson et al., 2012; Roberts & Jackson, 2008). Similarly, changes to self-construal appeared to have a downstream impact on patterns of thoughts, feelings, and behaviors (Lodi-Smith & Roberts, 2007; Roberts & Wood, 2006) in a corresponsive fashion (Roberts et al., 2008). Future research

should employ well-designed interventions to isolate the separate effects of implementation intentions targeting cognitive, affective, behavioral, and identity changes on subsequent trait change. Beyond these types of goal-setting interventions, interventions that employ interpersonal strategies, such as encouraging participants to commit to social roles that will instill desired traits within them, may also be effective avenues for promoting desired trait changes (Lodi-Smith & Roberts, 2007; Roberts & Wood, 2006; Stevenson & Clegg, 2011). Of course, individual differences—for example, beliefs about whether personality can be changed—may moderate the efficacy of any one type of intervention.

Limitations and Future Directions

There are at least six limitations of the present studies, in addition to those we have already discussed. First and foremost, these studies relied exclusively on self-report data. Although self-report data afford numerous advantages (e.g., individuals have greater insight into their own personalities—including subtle changes therein—than do observers; Paulhus & Vazire, 2007), they also have several limitations. For one, people's reports of their personality traits may be biased toward their desired levels of each trait. As such, it is possible that the participants in our studies were motivated to report increases with respect to traits that they desired. Along these lines, participants' self-reported personality traits may have been influenced by perceived demand characteristics inherent to the interventions, which asked them to develop a plan to change their traits. To overcome these limitations, future research on volitional personality change should use a variety of personality measures (Paulhus & Vazire, 2007). Different measures of personality traits entail different costs and benefits. For example, external observers may be able to perceive changes in certain traits (e.g., agreeableness) with better accuracy than the self. Similarly, observers' reports of personality traits are not susceptible to the same self-serving biases as self-reports—compared with the self, observers' ratings may be less affected by social desirability concerns or experimental demand. However, external observers may lack motivation to perceive changes in others' personalities (Paulhus & Vazire, 2007) and thus may be slower than the target to update their impressions of the target's personality. Such a process might potentially mask real trait changes—especially over a short period of time. The use of multiple methods in extended longitudinal designs may enable the idiosyncratic biases and limitations of any one approach to be compensated by the strengths of another approach.

A second, related limitation of the present studies is that it is possible that merely measuring change goals (e.g., via the C-BFI) may have altered or even activated people's desires for self-change. That is, it is possible that the C-BFI *per se* served as an intervention that provided a framework for participants to reflect upon, organize, and consolidate their desires to change themselves into actionable goals. If this is the case, it would seem difficult to fully understand people's naturalistic attempts to change their own personality traits. Future research should address this limitation by measuring the trajectories of people's personality traits before and after completing a change goals measure. To the extent that the C-BFI *per se* influences the formation or content of people's change goals—and to the extent that change goals are effective—we would expect to observe a discontinuity in the develop-

mental trajectories of people's personality traits before and after administration of the change goals measure.

A third limitation of the present studies is that we were unable to fully explore why the intervention from Study 1 backfired. We speculated that the Study 1 manipulation was ineffective because participants tended to generate vague, amorphous goals—which previous research suggests may be inefficacious (Gollwitzer & Brandstätter, 1997) or even deleterious to goal pursuit (e.g., Fishbach et al., 2006; Gollwitzer et al., 2009; Gopinath & Nyer, 2009). Supporting this line of reasoning, training participants in Study 2 to generate more specific implementation intentions seemed to facilitate their ability to attain desired changes to their traits. Nevertheless, our explanation for why the intervention in Study 1 backfired was ultimately speculative, and the intervention from Study 2 has not yet been replicated. As such, it is possible that the differences in efficacy between the interventions in Studies 1 and 2 may be partially attributable to sampling error. Clearly, much future research is needed to fully understand which types of interventions are effective in fostering volitional trait change.

A fourth limitation of the present research is that our design does not allow us to draw unambiguous causal inferences. Typically, internal validity is evaluated with respect to Mill's (1843) three criteria: (1) X and Y must be correlated, (2) X must precede Y in time, and (3) all alternative explanations for the relationship between X and Y must be ruled out. One of our primary findings was that change goals predicted subsequent growth in personality traits. The fact that a randomized intervention facilitated people's ability to attain their goals provides support for the idea that change goals temporally precede trait growth, and also helps to rule out potential confounds that might render the relationship between change goals and subsequent trait growth spurious. However, we also tested several mechanisms through which changes to traits might occur—including behavioral changes leading to trait change, and vice versa. Although we were able to establish that changes in behaviors temporally precede changes in traits (and vice versa), we were not able to rule out potentially confounding third variables. As such, we encourage future investigators to use experimental designs when viable to bolster internal validity.

A fifth limitation of the present studies is their relatively short duration. It is possible that the volitional changes observed in our studies are only temporary. Along those lines, the implementation intention intervention employed in Study 2 was effective in helping people attain desired changes to their personality traits; however we did not test whether those accelerated changes would be maintained after the discontinuation of the intervention. Future research should evaluate the long-term efficacy of change goals, replicate our intervention from Study 2, test other potentially effective interventions, and examine whether such manipulations lead to lasting gains in personality traits over the course of several years.

Sixth and finally, one reviewer observed that, on average, participants in our studies expressed goals to increase with respect to each trait; yet, on average, there was very little mean-level growth in each trait. To the extent that there is incongruence between the individual-level and group-level results, this may point to some interesting questions for future research. Having said that, we note that these studies were not designed to investigate mean-level changes, and that an interval of 16 weeks is not adequate to reveal the kinds of mean-level changes that are typically documented in

personality research. For example, using meta-analytic techniques, Roberts and colleagues (2006) found that, averaging across the Big Five traits, persons between the ages of 18 and 22 tend to increase approximately .16 standard deviations over a median timespan of 24 months. If we use that estimate to derive a crude expectation of the amount of change that we might observe over 4 months, the value is quite small—.03 standardized units—and less than the average mean-level growth observed over the course of 4 months in our studies (.08 standardized units).

Ultimately, however, we caution against assuming that the processes that take place at the individual level will also manifest at the group level (e.g., Clancy, Berger, & Magliozzi, 2003). It is possible that the individual-level processes can “add up” to create group-level patterns; however, given that people vary in their change goals and their starting trait levels, and that other unknown factors or processes may influence group-level trends, it is difficult to make an unambiguous link from one level of analysis to the next. In short, we caution readers against making group-level conclusions on the basis of our individual-level findings. What our findings collectively suggest is that individuals who desire to change their personality traits can, in fact, do so over a period of 16 weeks; and, at least in Study 2, those changes were facilitated by an intervention that encouraged participants to generate specific implementation intentions.

Conclusion

People want to change their personality traits. This desire is reflected in many beloved tales of characters—such as Harold Crick from *Stranger than Fiction*—who found success in changing even their most quintessential personal qualities. The present research provides the first evidence that these stories may actually reflect reality: People not only want to change their personalities—they may be able to *actually* change their personality traits in desired ways. Moreover, psychological interventions appear to be able to catalyze the change process. These findings suggest that volitional personality change may be more than just fiction.

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