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Lighten the darkness: Personality interventions targeting agreeableness also reduce participants' levels of the dark triad

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Abstract

Objective: Previous research suggests that people want to change their big five traits—and moreover, they may be able to do so. This paper extends these findings in three ways. First, I examined the extent to which people want to change their levels of the dark triad—Machiavellianism, narcissism, and psychopathy. Second, I tested whether desires to change the dark triad predicted actual changes in the corresponding traits across approximately four months. Finally, participants received an intervention designed to change their big five personality traits. Consequently, I tested whether this intervention could also facilitate changes in the dark triad.

Method: The present study was a 16-wave, weekly, intensive longitudinal design ($N = 467$).

Results: Results revealed that participants generally did not want to change their levels of the dark triad. Nevertheless, individual variance in desires to change the dark triad did predict actual changes in the dark triad across four months. Moreover, interventions targeting agreeableness spurred changes in all three dark triad traits.

Conclusions: This research suggests that taking small steps to become more agreeable may also reduce individuals' levels of the dark triad. These findings may have implications for future research, as well as therapeutic treatments.

KEYWORDS
adult personality development, dark triad, personality change interventions, volitional personality change

1 | INTRODUCTION

Previous research suggests that the vast majority of people want to change their big five personality traits (Baranski et al., 2017; Hudson & Fraley, 2016; Miller et al., 2019; Quintus et al., 2017). Moreover, people may be able to actually change their big five traits in desired ways (Hudson, Briley, et al., 2019; Hudson & Fraley, 2015). However, even though the big five captures most of the variance in human

personality, other traits *do* exist—such as the dark triad, which consists of Machiavellianism (e.g., cynical worldview, lack of morality, manipulativeness), narcissism (e.g., grandiosity, a sense of superiority), and psychopathy (e.g., emotional callousness, impulsivity). The dark triad have been shown to predict life outcomes—including deviant workplace behavior, criminality, and intimate partner violence—above and beyond the big five personality traits (Furnham et al., 2013; Kiire, 2017; Skeem & Cooke, 2010).

Given that most people want to change their big five traits (Hudson & Roberts, 2014) and appear to be able to do so (Hudson, Briley, et al., 2019; Hudson et al., 2020), the present study examined (a) the extent to which people want to change their dark triad traits, (b) whether people can actually change their dark triad traits, and (c) the extent to which interventions targeting the big five personality traits might have collateral effects on the dark triad. All told, this study provides insight into how empirically validated interventions (Hudson, Briley, et al., 2019) might reduce dark traits, which may have implications for critical life outcomes, such as relationship success, occupational attainment, emotion regulation, and well-being (e.g., Aghababaei & Błachnio, 2015; Furnham et al., 2013; Zeigler-Hill & Vonk, 2015).

1.1 | Volitional personality change in the big five

The big five personality traits predict an enormous gamut of critical life outcomes, including relational success, occupational attainment, well-being, health, and even mortality (Ozer & Benet-Martínez, 2006; Roberts et al., 2007). This has naturally led to interest in whether it might be possible to change people's personality traits through intervention—perhaps helping people maximize life outcomes in the process (e.g., Hennecke et al., 2014; Hudson & Roberts, 2014; Magidson et al., 2014; Roberts et al., 2017). To that end, one particularly promising personality-change intervention avenue capitalizes on the fact that most people want to change their personality traits (Baranski et al., 2017; Hudson, 2019, 2021; Hudson & Fraley, 2016, 2017; Hudson & Roberts, 2014; Miller et al., 2019; Quintus et al., 2017).

Indeed, one online study of more than 6800 adults found that, when asked using structured questionnaires, a minimum of 85% of participants wanted to increase in each individual big five trait—extraversion, agreeableness, conscientiousness, emotional stability (the opposite of neuroticism), and openness to experience (Hudson & Fraley, 2016). Moreover, a different study found that, even when asked to simply list ten personal goals that they are currently working on, approximately two-thirds of people spontaneously volunteer that one of their top ten most salient goals is to change part of their personality (Miller et al., 2019).

Thus, most people want to change their personality traits. But can they actually do so? To-date, 12 longitudinal studies have been published which have found that people tend to change in ways that align with their desires—at least across short periods of time, such as four months (Hudson et al., 2020). For example, people who

wish to increase in extraversion tend to actually do so at a faster rate than do their peers who do not wish to change. Moreover, several studies have found that interventions can help people make desired changes to their traits. For example, in one study, participants were randomly assigned to an intervention that asked them to brainstorm ways that they could modify their thoughts, feelings, and behaviors to align with their desired traits. Participants who received this intervention experienced much larger personality changes than did participants in the control group (Hudson & Fraley, 2015). In a different study, the researchers prewrote "challenges"—small behavioral steps that participants could take to move their thoughts, feelings, and behaviors into alignment with desired personality traits. Each week, participants were asked to select several "challenges" to work on across the subsequent week. In this study, participants who successfully completed challenges—thereby pulling their thoughts, feelings, and behaviors into alignment with their desired traits—tended to experience greater growth in extraversion, conscientiousness, and emotional stability, as compared with their peers who did not change their behaviors (Hudson, Briley, et al., 2019). Other studies have found that similar interventions can be effective in changing agreeableness, as well (Stieger et al., 2021). Notably, these studies converge on the finding that *actually changing behaviors* is crucial to spurring trait growth; mere exposure to the intervention is inert.

Thus, the emerging literature on volitional personality change suggests that (a) most people want to change their personality traits, (b) people tend to change in ways that align with their desires, and (c) interventions that promote "faking it until one makes it"—changing one's thoughts, feelings, and behaviors to align with desired traits—can facilitate trait growth, at least across short periods of time. Indeed, according to the sociogenomic model of personality (Roberts, 2018; Roberts & Jackson, 2008), any new patterns of thoughts, feelings, and behaviors that are maintained for a sufficiently long period of time can eventually coalesce into enduring trait change. This is thought to occur because the new thoughts, feelings, and behaviors become learned, automatized, habitual, and perhaps even encoded into biology through changes to the nervous system and/or epigenome (Briley & Tucker-Drob, 2014; Hennecke et al., 2014; Hudson & Fraley, 2017; McEwen et al., 2012; Roberts, 2018; Weaver et al., 2004). Thus, in the same way that workplaces cause people to increase in conscientiousness (Hudson & Roberts, 2016; Hudson et al., 2012) because they force people to think, feel, and behave in conscientious manners (e.g., workplaces reward and reinforce punctuality, responsibility, and high-quality work, whereas they punish tardiness, irresponsibility, and laziness), people appear to be able to manually—or

volitionally—change their own big five personality traits simply by enacting new patterns of thoughts, feelings, and behaviors over sufficient periods of time.

1.2 | The dark triad

Although the big five personality traits describe most of the ways that humans vary in terms of personality traits (Goldberg, 1993), other traits do exist that are not fully encompassed by the big five. One particularly important series of traits is known as the dark triad, which encompasses Machiavellianism (e.g., cynical, unprincipled, willing to manipulate others), narcissism (e.g., grandiosity, belief in one's own superiority), and psychopathy (e.g., lack of empathy, impulsivity) (Corry et al., 2008; Furnham et al., 2013; Rauthmann & Will, 2011). Although the dark triad correlates with the big five personality traits—and agreeableness in particular (Book et al., 2016; Jonason et al., 2013; Miller et al., 2001; Muris et al., 2017)—the dark triad are distinct traits that predict a variety of maladaptive behaviors above and beyond the big five. For example, the dark triad predict counterproductive and toxic workplace behavior (Harms et al., 2011), cheating in classroom settings (Nathanson et al., 2006; Williams et al., 2010), criminality (Skeem & Cooke, 2010), intimate partner violence (Kiire, 2017), sexual deviance (Williams et al., 2009; Zeigler-Hill et al., 2016), emotional dysregulation (Zeigler-Hill & Vonk, 2015), lower well-being (Aghababaei & Błachnio, 2015), and relational issues (Rauthmann & Kolar, 2012).

Although some have criticized the structure of the dark triad (e.g., Muris et al., 2017 argue that Machiavellianism and psychopathy are too similar to be considered distinct), research suggests that the three dark triad traits—despite sharing a common antagonistic core—predict unique outcomes. For example, psychopathy and narcissism—but not Machiavellianism—predict classroom cheating (Nathanson et al., 2006; Williams et al., 2010). Similarly, psychopathy—but not Machiavellianism—predicts both lower levels of well-being, as well as intimate partner violence (Aghababaei & Błachnio, 2015; Kiire, 2017). Thus, it is critical to study each of the three dark triad traits separately (Furnham et al., 2013).

Despite that the dark triad are important predictors of a myriad of consequential outcomes, few studies have examined (a) whether people want to change their levels of the dark triad, (b) whether desires to change the dark triad predict corresponding trait growth, and (c) whether the dark triad traits are liable to personality change interventions. This is an important gap in the empirical literature. Namely, previous research suggests that many individuals wish to change their big five personality traits

for intrinsic reasons (Hudson & Fraley, 2016; Hudson & Roberts, 2014). In other words, people oftentimes wish to possess socially desirable traits per se. To this end, research suggests that the dark triad traits are not seen as particularly desirable among general populations (Miller et al., 2018; Rauthmann & Kolar, 2012) and that individuals high in dark triad traits engage in self-presentational strategies designed to make themselves appear more desirable to others (Hart et al., 2019). Thus, it is possible that individuals high in dark traits may wish to reduce their levels of these traits for intrinsic reasons. Nevertheless, few studies have explicitly examined the extent to which people wish to change their dark triad traits.

1.3 | Overview of the present study

The present study was designed to fill a gap in the empirical literature regarding (a) whether people want to change their levels of the dark triad, (b) whether desires to change the dark triad predict corresponding trait growth, and (c) whether big five personality change interventions (Hudson, Briley, et al., 2019) might have a collateral effect on reducing participants' levels of the dark triad. What should we expect to find? On the one hand, prior research has found that people with personality disorders recognize the problems that their maladaptive traits cause them (Miller et al., 2018). Thus, people with high levels of the dark triad may similarly recognize the liabilities of their maladaptive traits and wish to change. On the other hand, all three dark triad traits seem to be characterized by a sense of superiority and emotional deftness (Furnham et al., 2013). Thus, people high in the dark triad may not view these traits as a liability.

Finally, in terms of interventions, the dark triad are strongly correlated with—but nevertheless remain at least partially discriminant from—agreeableness (with lesser links to conscientiousness) (Book et al., 2016; Crowe et al., 2019; Jonason et al., 2013; Miller et al., 2001; Muris et al., 2017). Consequently, interventions that successfully help participants increase in agreeableness or conscientiousness may have collateral effects in terms of reducing participants' levels of the dark triad. Indeed, prior research suggests that dark traits may be liable to intervention attempts (Finkel et al., 2009).

To investigate these issues, the present study was a 16-wave, weekly, intensive longitudinal design. At the beginning of the study, participants rated their desires to change their big five and dark triad traits. Every week throughout the course of a college semester, participants provided self-report ratings of their current big five and dark triad traits. Finally, all participants received an intervention—which has been validated in previous research (Hudson, Briley,

et al., 2019)—designed to help them change big five personality traits of their choosing. These data were used to examine (a) the extent to which people wish to change the dark triad, (b) whether desires to change the dark triad predicted corresponding trait growth, and (c) whether interventions targeting the big five might also influence the dark triad.

2 | METHOD

2.1 | Open science

This study was not preregistered. An abridged dataset containing key variables, as well as Supplemental Materials, can be found on Open Science Framework (OSF; https://osf.io/n4329/).

2.2 | Participants

A total of 467 participants were recruited from introductory psychology courses at Southern Methodist University (SMU) and the University of Illinois at Urbana-Champaign (UIUC).[1] This sample size provided more than 99% power to detect average-sized effects in personality psychology (equivalent to $r \sim .21$; Richard et al., 2003) and 80% power to detect effects as small as the equivalent of $r = .13$. Participants were asked to complete waves of the study in exchange for extra course credit. To participate, students were required to register an account on the study website. Participants were instructed to complete one wave of the study per week throughout the 16-week semester. However, to afford leniency and flexibility, the study website allowed participants to complete waves as frequently as once every five days.

On average, participants were 20.02 years old ($SD = 5.42$). Participants were asked to select all genders with which they identified. The sample was predominantly cisgender female (68%), followed by cisgender male (31%), three individuals who identified as transsexual (0.6%), and two who identified as nonbinary (0.4%). Participants were also asked to check all races or ethnicities with which they identified. Seventy-two percent of the sample identified as White, 15% identified as Asian, 9% identified as Hispanic/Latino, 7% identified as Black, 3% identified as Asian Indian, 2% identified as Middle Eastern, 2% identified as Native American, and 1% identified as Pacific Islander.

On average, participants completed 9.70 waves of the study ($SD = 5.41$), with 352 (75%), 257 (55%), and 101 (22%) participants providing data at Waves 5, 10, and 16, respectively. As measured at Wave 1, participants tended to provide more waves of data if they were female ($r = .28$,

95% CI [.20, .36]), higher in conscientiousness ($r = .29$, 95% CI [.21, .37]), or lower in psychopathy ($r = -.26$, 95% CI [$-.34$, $-.17$]) or desires to become less psychopathic ($r = -.10$, 95% CI [$-.19$, $-.01$]). No other study variables were statistically significantly related to the number of waves of data provided (all $|r|$s $\leq .09$, 95% CI [$-.01$, .18]).

2.3 | Measures

2.3.1 | Big five personality traits

Every wave, participants' big five personality traits were measured using the 30-item Big Five Inventory 2—Short (BFI2S; Soto & John, 2017). The BFI2S contains separate 6-item subscales to measure extraversion (e.g., "I see myself as someone who is outgoing, sociable"), agreeableness (e.g., "I see myself as someone who assumes the best about people"), conscientiousness (e.g., "I see myself as someone who keeps things neat and tidy"), emotional stability (the opposite of neuroticism; e.g., "I see myself as someone who is emotionally stable, not easily upset"), and openness to experience (e.g., "I see myself as someone who is original, comes up with new ideas"). All items were rated on a Likert scale from *strongly disagree* (1) to *strongly agree* (5) and were averaged to from composites for each individual big five trait (αs ranged from .74 [openness] .81 [emotional stability]).

2.3.2 | Dark triad traits

Every wave, participants' dark triad traits were measured using the 27-item Short Dark Triad scale (SD3; Jones & Paulhus, 2014). The SD3 has separate 9-item subscales to measure Machiavellianism (e.g., "I use clever manipulations to get my way"), narcissism (e.g., "I know that I am special because everyone keeps telling me so"), and psychopathy (e.g., "Payback needs to be quick and nasty"). All items were rated on a Likert scale from *strongly disagree* (1) to *strongly agree* (5) and were averaged to form separate composites for each dark triad trait (αs ranged from .70 [psychopathy] to .75 [Machiavellianism]).

2.3.3 | Big five change goals

At Wave 1 only, participants' big five change goals (i.e., desires to change the big five personality traits) were measured using the 30-item Change Goals BFI2S (C-BFI2S), which was created for this study. As with the original C-BFI (Hudson & Roberts, 2014) and C-BFI2 (Hudson, Derringer, et al., 2019), the C-BFI2S is an adaptation of the

BFI2S in which all of the items were reworded to measure how people wish to change their personality traits. For example, the CBFI2 item, "I see myself as someone who is outgoing, sociable" was reworded to read, "I want to be someone who is outgoing, sociable." All items were rated on a five-point scale from *much less than I currently am* (−2), to *I do not wish to change this trait* (0), to *much more than I currently am* (+2). Thus, participants could indicate goals to increase, decrease, or stay the same with respect to each item in the inventory. Items were averaged to form separate composites for goals to change each big five domain (αs ranged from .69 [conscientiousness] to .82 [emotional stability]). In terms of interpretation, positive values represent goals to increase in a trait, negative values represent goals to decrease, and values close to zero represent individuals who do not wish to change.

2.3.4 | Dark triad change goals

At Wave 1 only, participants' goals to change their dark triad traits were measured using the Change Goals SD3 (C-SD3), a new measure created for this study. As with the C-BFI/2/S, all items in the SD3 were rewritten to measure the extent to which participants wanted to change their dark triad traits. For example, the SD3 item "Payback needs to be quick and nasty" was rewritten as "I want to be someone who gets quick and nasty payback on others who cross me." All items were rated on a five-point scale from *much less than I currently am* (−2), to *I do not wish to change this trait* (0), to *much more than I currently am* (+2) and were averaged to form separate composites for goals to change each dark triad trait (αs ranged from .64 [psychopathy] to .68 [Machiavellianism]).[2]

2.4 | Procedure

Participants were required to register an account on the study website to participate. Participants provided up to 16 waves of data. Participants could provide new waves of data at their own pace; however, they were required to wait a minimum of five days between waves. If participants waited longer than seven days between waves, the study website sent automated email reminders to continue the study. Every wave, participants provided ratings of their big five and dark triad personality traits. At Wave 1 only, participants also provided ratings of their goals to change their big five and dark triad traits. To reduce order and demand effects, participants always rated change goals *after* rating their current traits.

In addition to completing personality measures, at the end of each wave, all participants were provided with a preexisting, validated intervention designed to help them make desired changes to their big five personality traits (Hudson, Briley, et al., 2019). Using the exact same intervention as Hudson, Briley, and colleagues (2019), at Wave 1, all participants were allowed to nominate which of the big five personality traits they wished to change across the duration of the study. Afterward, participants were presented with a series of 50 "challenges" for each nominated trait. These challenges were behavioral goals—written by Hudson, Briley, and colleagues (2019)—that were designed to help participants pull their thoughts, feelings, and behaviors in alignment with their desired traits. For example, someone who wanted to increase in extraversion would receive challenges similar to "At least once this week, ask a friend to coffee" or "At least once this week, download the app 'Meet Up' on your phone and go to an event that you're interested in." Each wave, participants could browse the full list of challenges for their nominated traits and accept 1–4 challenges that they wanted to attempt during the following week. Based on participants' histories of successfully completing or failing challenges, the study website automatically recommended several challenges calibrated to participants' estimated ability level. However, participants were free to browse the full list of challenges each week and select any challenges that they desired.

During the following wave, participants were reminded of the challenges they had previously accepted—and they were asked to indicate how many times they had performed the behavior in question during the prior week. Subsequently, participants were asked to select new challenges for the following week. Adherence to this intervention has been shown to successfully help participants change their levels of extraversion, conscientiousness, and emotional stability (Hudson, Briley, et al., 2019). Thus, as in prior studies, the key predictor in my analyses was *the average number of trait-relevant challenges* participants reported successfully completing each week. For in-depth information about the intervention, including the full list of challenges for each trait, please see Hudson, Briley, et al. (2019).

After participants completed all 16 waves, they were provided with a debriefing page that summarized how their personality traits had changed across the course of the semester. Results pages were made available for all participants (including those who did not complete all waves) after all data collection had ceased.

3 | RESULTS

Table 1 contains the descriptive statistics and intercorrelations for key study variables at Wave 1.[3] As in previous

TABLE 1 Wave 1 descriptive statistics and correlations

Variable	M	SD	Correlations															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Traits																	
1. E	3.41	0.74	–														
2. A	3.71	0.65	**.13**	–													
3. C	3.47	0.72	**.21**	**.20**	–												
4. S	2.97	0.80	**.27**	**.10**	**.19**	–											
5. O	3.73	0.64	**.11**	**.20**	.00	-.01	–										
6. Mach	3.04	0.61	-.08	**-.43**	**-.25**	-.08	**-.11**	–									
7. Narc	3.10	0.58	**.65**	-.01	.06	**.17**	**.15**	**.19**	–								
8. Psyc	2.21	0.56	.07	**-.48**	**-.37**	-.02	-.01	**.56**	**.30**	–							
Change goals																	
9. E	0.75	0.47	**-.39**	.04	-.01	**-.26**	.02	.00	**-.30**	**-.11**	–						
10. A	0.56	0.53	.02	**-.15**	.01	**-.15**	-.03	-.03	.00	-.02	**.38**	–					
11. C	0.82	0.49	**-.10**	-.01	**-.44**	**-.18**	**.12**	.09	-.09	.09	**.42**	**.45**	–				
12. S	1.01	0.58	**-.19**	.02	-.04	**-.64**	**.12**	.00	**-.17**	-.08	**.49**	**.40**	**.47**	–			
13. O	0.72	0.50	**-.15**	.05	-.07	**-.15**	-.07	.06	**-.10**	-.03	**.47**	**.45**	**.52**	**.46**	–		
14. Mach	-0.11	0.40	-.08	**-.09**	-.09	.06	-.03	**.30**	.02	**.13**	**-.11**	**-.46**	**-.17**	**-.16**	**-.17**	–	
15. Narc	0.49	0.39	**-.11**	.04	-.09	**-.23**	.02	**.16**	-.05	-.05	**.49**	**.23**	**.36**	**.40**	**.36**	.01	–
16. Psyc	0.32	0.16	**.26**	**.13**	**.18**	**.37**	.01	-.01	**.26**	.07	-.01	**-.14**	**-.12**	**-.22**	.00	**.34**	-.01

Note: The 95% CIs for correlations in **boldface** do not include zero.

Abbreviations: A, agreeableness; C, conscientiousness; E, extraversion; Mach, Machiavellianism; Narc, narcissism; O, openness to experience; Psyc, psychopathy; S, emotional stability.

research (Baranski et al., 2017; Hudson & Roberts, 2014; Miller et al., 2019), goals to change each of the big five personality traits were negatively related to existing levels of the trait (average $r = -.41$, 95% CI $[-.48, -.33]$)—with the exception of openness to experience ($r = -.07$, 95% CI $[-.16, .02]$). In contrast, the dark triad traits did not follow this pattern. People higher in Machiavellianism wanted to *further increase* in the trait ($r = .30$, 95% CI $[.22, .38]$), and levels of narcissism and psychopathy were unrelated to goals to change the respective traits (average $r = .01$, 95% CI $[-.08, .10]$). Curiously, as seen in Figure 1, the average person in the sample *did* want to decrease in Machiavellianism ($M = -0.11$, $SD = 0.40$); however, the average participant wanted to *increase* in both narcissism ($M = 0.49$, $SD = 0.39$) and psychopathy ($M = 0.32$, $SD = 0.16$). This may have to do with the fact that several items that measure narcissism and psychopathy seem desirable at face (e.g., being a natural leader; not being an "average" person; not feeling embarrassed by compliments; not being afraid of dangerous situations). Nevertheless, these results holistically suggest that people generally do not wish to change their dark triad traits, and—unlike the big five—people higher in the dark triad do not feel particularly strong desires to decrease in the corresponding traits.

In terms of the intervention, at the beginning of the study, participants were allowed to select one or more big five traits for which they wanted to receive a trait-change intervention. A total of 281 (60%) participants nominated to work on extraversion, 105 (22%) nominated agreeableness, 221 (47%) nominated conscientiousness, 274 (59%) nominated emotional stability, and 147 (31%) nominated openness to experience. Participants who were lower in any big five trait were more likely to nominate the respective trait (average $r = -.30$, 95% CI $[-.38, -.22]$), with the exception of openness to experience ($r = .02$, 95% CI $[-.07,$ .11]). As expected, for all big five traits, people with higher goals to change any trait (as measured via the C-BFI2S) were more likely to nominate to work on the corresponding trait (average $r = .26$, 95% CI $[.17, .34]$). Finally, people higher in any of the three dark triad traits were likely to indicate that they wanted an intervention to increase in agreeableness (average $r = .15$, 95% CI $[.06, .24]$).

3.1 | Do change goals predict trait growth?

For my first series of analyses, I examined whether change goals—measured only at Wave 1—predicted corresponding trait growth. These analyses test whether, for example, wanting to increase in extraversion at the beginning of the study predicted *actual* increases in extraversion across the subsequent four months. Using the same statistical methods as prior research (Hudson & Fraley, 2015; Hudson et al., 2020), I modeled participants', p, personality traits at wave, w, as a function of their change goals and time. For example, the multilevel model predicting growth in extraversion was

$$
\begin{aligned}
\text{(Trait Extraversion)}_{pw} = {} & b_0 + b_1 \text{(Extraversion Change Goals)}_p \\
& + b_2 \text{(Time)}_{pw} + b_3 \text{(Extraversion Change Goals)}_p \\
& \text{(Time)}_{pw} + U_p + \varepsilon_{pw}
\end{aligned}
$$

In all models, all variables (except time) were standardized across the entire sample (see Ackerman et al., 2011). Time was centered on Wave 1 and scaled in terms of months.[4] Thus, the b_2 (Time) parameter captures the average monthly trait growth in the sample, scaled in *SDs* per month. The b_3 interaction term captures the extent to which change goals moderated trait growth. A positive interaction term indicates that individuals who wished to
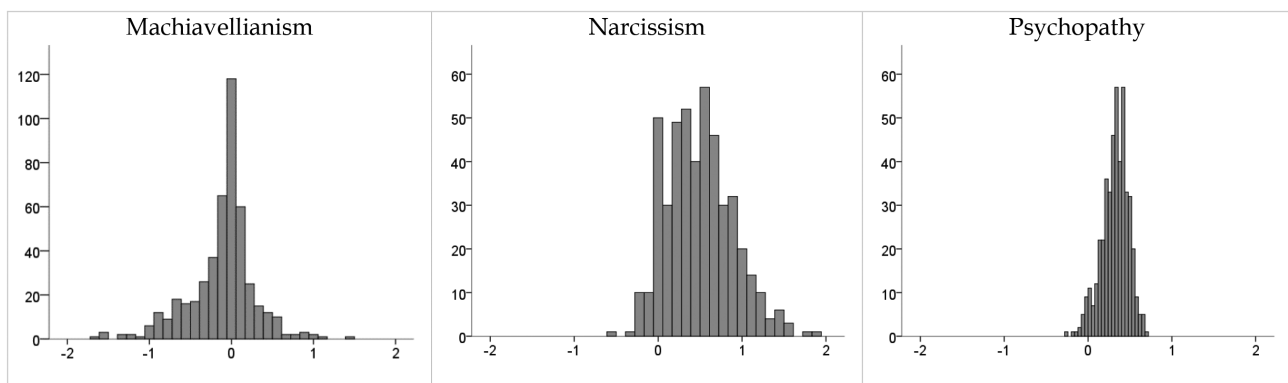

FIGURE 1 Histograms of goals to change the dark triad. Change goals range from −2 to +2. Positive values indicate desires to increase in a trait, whereas negative values indicate desires to decrease in a trait. The average person in the sample wanted to decrease in Machiavellianism—but wanted to *increase* in narcissism and psychopathy. There was extremely little variance in goals to change psychopathy

change their personalities experienced greater growth in the trait each month, as compared with their peers who did not wish to change.

Consistent with mega-analyses of previous research (Hudson et al., 2020), change goals predicted trait growth for extraversion ($b = .01$, 95% CI [.00, .02]), conscientiousness ($b = .02$, 95% CI [.01, .03]), and emotional stability ($b = .03$, 95% CI [.02, .04])—but not agreeableness or openness ($bs = .00$; see Table 2). Although mega-analyses of several thousand participants show that change goals predict trait growth for all five traits, the effects for agreeableness and openness are considerably smaller than the effects for the other three domains (Hudson et al., 2020). Thus, it is likely that the present study was underpowered to detect effects for agreeableness and openness. Finally, as depicted in Table 3, similar to the big five, goals to change Machiavellianism and psychopathy also predicted corresponding change in the relevant trait (respective effects: $b = .01$, 95% CI [.00, .02]; $b = .02$, 95% CI [.01, .04])—but not narcissism ($b = .01$, 95% CI [−.00, .02]).[5] For example, as seen in the left-hand panel of Figure 2, people who wanted to decrease in Machiavellianism ($z = -1$; original scale score $= -.51$) tended to actually decrease in Machiavellianism .03 SDs per month (95% CI [−.05, −.01]). In contrast, people who were relatively okay with their existing levels of Machiavellianism ($z = 1$; original scale score $= .29$) did not experience growth in the trait each month ($b_{month} = -.01$, 95% CI [−.02, .01]).

3.2 | Did the intervention help people change?

3.2.1 | Direct effects of the intervention on the big five traits

For my next series of analyses, I examined whether the intervention helped people make desired changes to their big five personality traits. Using the same statistical models as prior research (Hudson, Briley, et al., 2019), I modeled growth in each trait as a function of the average number of weekly challenges that participants *reported successfully completing* and time. For example, the model for extraversion was

$$(\text{Trait Extraversion})_{pw} = b_0 + b_1(\text{Extraversion Challenges})_p$$
$$+ b_2(\text{Time})_{pw} + b_3(\text{Extraversion Challenges})_p$$
$$(\text{Time})_{pw} + U_p + \varepsilon_{pw}$$

In this model, challenges completed was operationalized as the *average number of challenges participants completed per week* in the study (see Hudson, Briley, et al., 2019). Thus, these models examined the extent to which consistently completing challenges across the

TABLE 2 Change goals predicting growth in the big five

	Outcomes: Personality traits														
	E			A			C			S			O		
		95% CI			95% CI			95% CI			95% CI			95% CI	
Predictors	b	LB	UB	b	LB	UB	b	LB	UB	b	LB	UB	b	LB	UB
Intercept	.02	−.06	.10	.03	−.05	.11	**−.10**	−.18	−.03	**−.08**	−.14	−.01	.03	−.06	.11
Month	**−.03**	−.04	−.02	**−.03**	−.04	−.02	−.01	−.02	.00	**.04**	.02	.05	−.01	−.02	.00
Change goal	**−.38**	−.46	−.30	**−.16**	−.24	−.08	**−.46**	−.53	−.38	**−.63**	−.70	−.56	−.05	−.13	.03
Month × change goal	**.01**	.00	.02	.00	−.01	.01	**.02**	.01	.03	**.03**	.02	.04	.01	−.00	.02

Note: The 95% CIs for parameters in **boldface** do not include zero.

Abbreviations: A, agreeableness; C, conscientiousness; CI, confidence interval; E, extraversion; O, openness to experience; S, emotional stability.

TABLE 3 Change goals predicting growth in the dark triad

	Outcomes: Dark triad traits								
	Mach			Narc			Psyc		
		95% CI			95% CI			95% CI	
Predictors	*b*	LB	UB	*b*	LB	UB	*b*	LB	UB
Intercept	.07	−.01	.15	.01	−.08	.10	.03	−.06	.11
Month	**−.02**	−.03	−.01	.00	−.02	.01	**.05**	.04	.07
Change goal	**.22**	.15	.30	−.07	−.16	.02	−.02	−.04	.01
Month × change goal	**.01**	.00	.02	.01	−.00	.02	**.02**	.01	.04

Note: The 95% CIs for parameters in **boldface** do not include zero.

Abbreviations: CI, confidence interval; Mach, Machiavellianism; Narc, narcissism; Psyc, psychopathy.
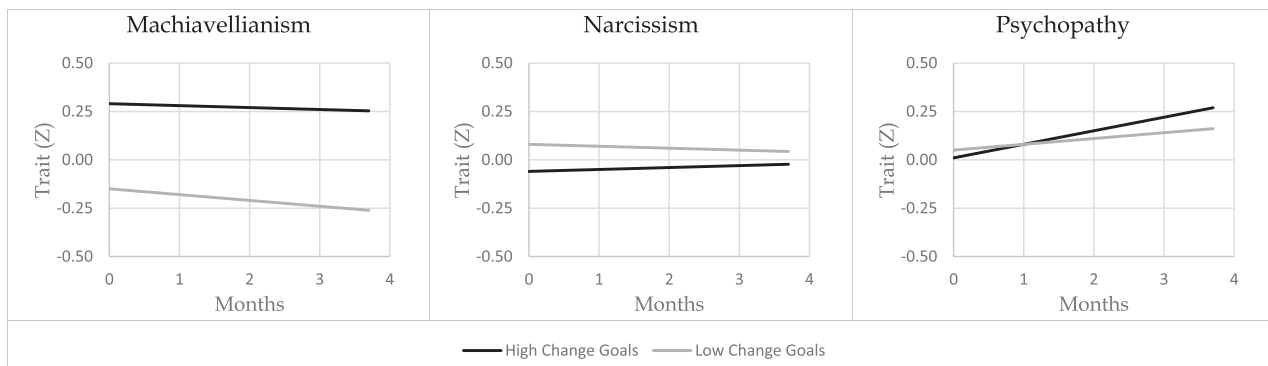
FIGURE 2 Dark triad change goals predicting changes in the corresponding trait. The "high change goals" lines were plotted at 1 *SD* above the mean of the change goals variables. The "low change goals" lines were plotted at 1 *SD* below the mean. Change goals predicted trait growth for Machiavellianism and psychopathy—but not for narcissism. Thus, for example, people who wanted to decrease in Machiavellianism did so at a faster rate than their peers who did not wish to change

course of the study predicted trait growth in the corresponding trait.

As seen in Table 4, adherence to the intervention predicted growth in extraversion (*b* = .01, 95% CI [.00, .03]), agreeableness (*b* = .03, 95% CI [.02, .04]), and emotional stability (*b* = .02, 95% CI [.01, .03])—but not conscientiousness or openness (*b*s = .00). In other words, people who successfully changed their behavior to be more extraverted, agreeable, or emotionally stable over the course of the study also reported gains in the corresponding traits. Previous research has found that this exact same intervention is effective in increasing extraversion, conscientiousness, and emotional stability (Hudson, Briley, et al., 2019). Similar interventions have also successfully changed agreeableness in prior studies (Stieger et al., 2021). The fact that the intervention facilitated growth in agreeableness and conscientiousness in one study—but not the other—likely indicates that both studies were somewhat underpowered to detect effects. Nevertheless, the present study's findings are consistent with the idea that changing thoughts, feelings, and behaviors over the course of

several weeks can promote trait growth—and that psychological interventions can help change traits.

3.2.2 | Collateral effects of the intervention on the dark triad traits

For my final series of analyses, I examined whether adherence to the big five trait change intervention predicted growth in any of the dark triad traits. As seen in Table 5, individuals who successfully adhered to the agreeableness intervention tended to experience decreases in all three dark triad traits (average *b* = −.01, 95% CI [−.02, −.01]). Thus, individuals who successfully enacted new agreeable behaviors throughout the course of the study were likely to drop in Machiavellianism, narcissism, and psychopathy throughout the study, as well. For example, as depicted in Figure 3, a person who performed just one new agreeable behavior (via intervention adherence) per week (*z* = 1.1) was likely to drop 0.04 *SD*s in Machiavellianism each month (95% CI [−.06, −.02]). In

TABLE 4 Intervention adherence predicting growth in big five

Predictors	E			A			C			S			O		
		95% CI			95% CI			95% CI			95% CI			95% CI	
	b	LB	UB	b	LB	UB	b	LB	UB	b	LB	UB	b	LB	UB
Intercept	.01	−.08	.10	.04	−.05	.12	−.14	−.23	−.05	−.08	−.16	.01	.04	−.05	.12
Month	**−.03**	−.04	−.02	**−.03**	−.05	−.02	−.01	−.02	.00	**.04**	.02	.05	−.01	−.02	.00
Challenges	**−.12**	−.21	−.02	−.03	−.13	.07	−.09	−.19	.01	**−.15**	−.25	−.05	.06	−.04	.16
Month × challenges	.01	.00	.03	**.03**	.02	.04	.00	−.01	.01	**.02**	.01	.03	.00	−.01	.01

Note: The 95% CIs for parameters in **boldface** do not include zero.

Abbreviations: A, agreeableness; C, conscientiousness; CI, confidence interval; E, extraversion; O, openness to experience; S, emotional stability; Challenges, average number of weekly behavioral-change challenges completed.

contrast, a person who completed no new agreeable behaviors ($z = -0.34$) was likely to experience much smaller drops in Machiavellianism each month ($b_{month} = -.01$, 95% CI [−.03, −.00]).

Importantly, as seen in Table S1 (https://osf.io/n4329/), controlling for agreeableness did not affect the parameter estimates for Machiavellianism or narcissism. Thus, the intervention led to drops in Machiavellianism and narcissism *above and beyond* any changes that participants experienced in agreeableness. In contrast, controlling for agreeableness eliminated the effect of the intervention on psychopathy (controlled $b = .00$, 95% CI [−.02, .01]). This indicates that the intervention *did* reduce people's psychopathy; however, this reduction in psychopathy was completely explained by changes that participants experienced in agreeableness.

Finally, as seen in Tables S2–S5 (https://osf.io/n4329/), adherence to the interventions to change other traits generally did not induce growth in the dark triad. There were two isolated exceptions. First, adherence to the extraversion intervention predicted *increased* narcissism ($b = .02$, 95% CI [.01, .03]). Second, adherence to the openness intervention predicted declines in Machiavellianism ($b = .01$, 95% CI [−.02, −.00]). Both of these effects withstood controlling the respective big five trait (i.e., the extraversion intervention predicted gains in narcissism, above any beyond any gains in extraversion). Given the sporadic and inconsistent nature of these effects, they may represent sampling error (i.e., Type-I error). In contrast, to the extent that these estimates represent true population effects, they may indicate that increased socialization behaviors lead to higher narcissism (at least among college students) and that increased efforts to be introspective, appreciative of beauty, and less prejudiced lead to lower Machiavellianism.

4 | DISCUSSION

The present study was designed to investigate (a) the extent to which people want to change their levels of the dark triad, (b) whether desires to change the dark triad predict actual growth in the corresponding traits, and (c) whether interventions targeting the big five might also have a collateral effect on the dark triad. Overall, findings suggested that (a) people do not generally want to change their levels of the dark triad in socially desirable ways; (b) but nevertheless, people who do wish to change with respect to the dark triad *do* tend to experience corresponding trait growth over time; and (c) interventions targeting agreeableness also reduce people's levels of all three dark triad traits. In the sections that follow, I summarize these findings and further discuss their implications.

TABLE 5 Agreeableness intervention adherence predicting growth in the dark triad

Predictors	Outcomes: Dark triad traits								
	Mach			**Narc**			**Psyc**		
		95% CI			**95% CI**			**95% CI**	
	b	**LB**	**UB**	**b**	**LB**	**UB**	**b**	**LB**	**UB**
Intercept	.07	−.02	.15	.02	−.07	.11	.03	−.06	.11
Month	**−.02**	−.03	−.01	.00	−.02	.01	**.05**	.04	.07
Challenges	−.03	−.13	.07	.12	.01	.22	.01	−.09	.12
Month × challenges	**−.02**	−.03	−.01	**−.01**	−.02	−.00	**−.01**	−.02	−.00

Note: the 95% CIs for parameters in **boldface** do not include zero.

Abbreviations: Challenges, average number of weekly agreeableness behavioral-change challenges completed; CI, confidence interval; Mach, Machiavellianism; Narc, narcissism; Psyc, psychopathy.

FIGURE 3 Adherence to agreeableness intervention predicting growth in the dark triad traits. The "one new agreeable behavior per week" lines are plotted at 1.10 SDs above the mean of agreeableness challenge completion (original scale score = 1). The "no new agreeable behaviors" lines are plotted at −0.34 SDs below the mean of agreeableness challenge completion (original scale score = 0). People who completed more numerous agreeable behaviors each week were likely to experience more negative growth in each dark triad trait, as compared to individuals who did not change their agreeable behaviors

4.1 | Do people wish to change the dark triad?

Previous research suggests that the vast majority of people want to increase with respect to each big five personality trait (Hudson & Fraley, 2016). The present study replicated this finding. Moreover, as in previous research, lower levels of the big five were linked to greater desires to increase in the respective trait (Baranski et al., 2017; Hudson & Roberts, 2014; Miller et al., 2019). This finding has generally been interpreted to mean that people intrinsically want to increase in desirable traits that they lack. Thus, it is possible that people might also want to rid themselves of undesirable traits, such as the dark triad (Miller et al., 2018; Rauthmann & Kolar, 2012).

In contrast to the big five, people reported very small desires to decrease in Machiavellianism. However, the average participant reported wanting to *increase* in both narcissism and psychopathy. These unexpected patterns likely have to do with the fact that both narcissism and psychopathy are measured as an amalgam of traits that

can be desirable in limited quantities—but which become destructive in excess (Jones & Paulhus, 2014). For example, the narcissism change goals measure asked people whether they would like to increase in qualities such as "being a natural leader," feeling comfortable "being the center of attention," and being someone who "makes activities lively, such that people feel things are dull if I'm not there." Similarly, the psychopathy change goals questions asked people whether they would like to become less afraid of dangerous situations, or become someone who others are "afraid to mess with." In contrast, it is likely that many of the negative narcissism and psychopathy change goals questions simply did not apply to many of the participants. For example, it seems unlikely that a participant who has never been in legal trouble would respond that they would like to decrease in terms of "getting into trouble with the law" (a psychopathy change goals item).

Irrespective of these measurement issues, goals to change with respect to the dark triad did not follow the same pattern of correlations with existing traits as is typically seen with the big five. Indeed, trait Machiavellianism

was *positively* correlated with desires to *continue increasing* in Machiavellianism, and trait levels of narcissism and psychopathy were unrelated to desires to change the respective traits. This seems to indicate that, in contrast to research on personality disorders (Miller et al., 2018), people with high levels of the dark triad do not recognize the relevant traits as being a liability. Indeed, people with high levels of Machiavellianism seem to believe that the trait is *an asset* to them that should be further developed. Likewise, individuals higher in narcissism and psychopathy likely believe themselves to be superior to others and/ or lack the emotional acuity to recognize the harm caused by their maladaptive traits (Furnham et al., 2013)—and thus do not wish to change the traits.

4.2 | Do change goals predict change in the relevant traits?

Largely replicating previous research, the present study found that people who wanted to increase in extraversion, conscientiousness, or emotional stability tended to do so over time (Hudson et al., 2020). A previous mega-analysis of a dozen longitudinal studies suggests that the correlations between change goals and trait growth for agreeableness and openness are quite small. Thus, the present study was likely underpowered to detect effects for these traits.

Similar to the big five, goals to change with respect to Machiavellianism and psychopathy predicted corresponding growth in the relevant traits—whereas goals to change with respect to narcissism did not predict trait change. However, these associations require nuanced interpretation. Namely, akin to the big five, it appears that people who wanted to decrease in Machiavellianism tended to actually do so across time. Thus, people who recognize that their Machiavellianism is problematic may be able to reduce their levels of the trait. In contrast, few people wanted to decrease in psychopathy. Thus, the present study's findings suggest an unfortunate reality: people who want to increase in psychopathy tend to actually do so across time. This suggests that some individuals may view psychopathy as an asset and worsen in the trait across time.

4.3 | Can big five trait interventions change the dark triad?

The final goal of the present study was to examine whether interventions to change big five personality traits might predict collateral changes in the dark triad. To that end, this study used an existing, validated intervention (Hudson, Briley, et al., 2019). In the present study, the intervention was successful in helping people change their levels of extraversion, agreeableness, and emotional stability. In other words, participants who adhered to the intervention tended to experience gains in the three aforementioned traits.

More excitingly, the agreeableness intervention in particular spurred reductions in all three dark triad traits. This aligns with prior research which suggests that low levels of agreeableness are linked to elevated levels of the dark triad (Book et al., 2016; Jonason et al., 2013; Miller et al., 2001; Muris et al., 2017). This is a particularly important finding for several reasons. First, as described above, people with high levels of the dark triad were not particularly likely to want to reduce their own levels of the maladaptive traits. However, all three dark triad traits predicted individuals voluntarily self-selecting into the intervention targeting agreeableness. Moreover, those who adhered to the agreeableness intervention experienced decreases in their dark traits. Thus, taken together, these findings suggest that interventions targeting agreeableness may be an effective method to help reduce people's levels of the dark triad—in a way that they are likely to cooperate with. This may have important implications for helping people with elevated levels of the dark triad maximize important life outcomes, including occupational attainment (Harms et al., 2011), academic achievement (Nathanson et al., 2006; Williams et al., 2010), fewer incidents with the legal system (Williams et al., 2009), improved relationship quality (Kiire, 2017), better emotional functioning (Zeigler-Hill & Vonk, 2015), and greater well-being (Aghababaei & Błachnio, 2015).

Thus, to summarize, the present study found that most people do not particularly want to change their dark triad traits. Nevertheless, innocuous big five trait-change interventions may be an effective way to lower people's levels of the dark triad in a way that they are likely to cooperate with. This has potentially important implications for future research on personality interventions, as well as the potential to inform public policy and therapeutic treatments.

4.4 | Limitations and future directions

There are several limitations of the present study that deserve consideration. First, the present study relied exclusively on self-report data from college students. Although previous research suggests that college students are not particularly aware of how their personality has changed—even in the context of intensive longitudinal studies (Hudson, Derringer, et al., 2019)—it remains possible that the present results may be partially attributable to self-serving biases or demand characteristics. Future research should corroborate self-reports of

trait change with other methods (e.g., observer reports; Paulhus & Vazire, 2007).

Second and related, the present study had a relatively short duration—approximately four months. Although research suggests that enduring trait change can be spurred in as few as six weeks (Roberts et al., 2017), it is also possible that traits may follow cyclical patterns (Biesanz et al., 2003). For example—similar to weight loss (Polivy & Herman, 2002)—people may experience gains in traits (e.g., extraversion) while they are explicitly working on changing the trait, but may revert to baseline levels once they become complacent. Likewise, research has not probed the maximum amount of change people might be able to experience in traits. Thus, future research should examine volitional change processes and personality change interventions over extended periods of time, such as multiple years.

Third, the present study did not contain any measures of life outcomes. Thus, although the dark triad should predict a wide variety of important outcomes, such as relational success, occupational attainment, criminality, and well-being (Furnham et al., 2013), the present study did not contain measures to test these hypotheses. Thus, future research should examine the within-person correlations between the dark triad and life outcomes—as well as whether personality trait change interventions have a downstream effect on life outcomes, mediated by changes in the dark triad.

Fourth, due to practical constraints, the present study used a short measure of the dark triad. Thus, I was unable to explore whether facets and/or variants of each dark trait might operate differently than the broad traits per se (Krusemark et al., 2018). Future research should replicate the present findings with longer, more granular measures of the dark triad.

Finally, the present study included only young, college-aged individuals. Although research suggests that life experiences affect people's trait growth similarly, irrespective of age (e.g., Hudson & Roberts, 2016), it remains possible that older adults may experience greater difficulty in changing their traits, as compared to college students. Similarly, the specific traits that people wish to change varies by age (Hudson & Fraley, 2016). Consequently, it is possible that older individuals would not want to increase their levels of the dark triad—and that such a phenomenon is unique to college-aged individuals. Therefore, future research should use age-diverse samples to test volitional change processes and trait-change interventions—especially as they pertain to the dark triad.

4.5 | Conclusion

Previous research suggests that the vast majority of people (a) want to change their big five personality traits (Baranski et al., 2017; Hudson & Fraley, 2016; Miller et al., 2019), (b) may find some degree of success in doing so (Hudson et al., 2020), and (c) that interventions can help (Hudson, Briley, et al., 2019; Hudson & Fraley, 2015). The present study replicated these prior findings and also found that, although people generally do not wish to change their levels of the dark triad, validated interventions targeting agreeableness (Hudson, Briley, et al., 2019) have a collateral effect in terms of reducing all three dark triad traits. This research has important implications for understanding how to design interventions to change the dark triad—and it also suggests that big five trait change interventions may be able to affect traits that fall outside the scope of the big five, which may have potential downstream effects on important life outcomes.

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ENDNOTES

[1] Data from these participants have not been published elsewhere, and they were not included in prior mega-analyses of volitional change processes (Hudson et al., 2020).

[2] Reviewers requested factor analyses of the C-SD3. Scree plots and principal axis factor analyses with varimax rotation of both the SD3 and C-SD3 suggested that a 3-factor solution was appropriate for both scales. However, for both scales, the factor solution was not particularly clean. Nevertheless, the first factor was generally a combination of Machiavellianism and psychopathy, the second factor was generally narcissism, and the third factor generally contained psychopathy items related to risk (e.g., "I avoid dangerous situations," "people generally say I'm out of control"). Thus, the present data seem to support criticisms that Machiavellianism and psychopathy are not distinct (Muris et al., 2017). Nevertheless, the factor structure was similar across the SD3 and C-SD3, suggesting that both scales tapped the same constructs.

[3] Reviewers requested gender analyses. As compared to all other genders combined, cisgender men were higher in Machiavellianism and psychopathy (respective rs = .23, 95% CI [.14, .31]; .27, 95% CI [.18, .35]), but not narcissism (r = .05, 95% CI [−.04, .14]). Cisgender men were also more likely to desire decreases in narcissism (r = −.10, 95% CI [−.18, −.01]), but not

Machiavellianism or psychopathy (rs ≤ .03, 95% CI [−.06, .12]). Finally, in terms of longitudinal effects, change goals predicted growth in Machiavellianism more strongly for cisgender men than other genders (b = .03, 95% CI [+.00, .06]) and completing agreeableness challenges predicted sharper drops in narcissism for cisgender men than for other genders (b = −.07, 95% CI [−.12, −.02])—but gender did not moderate any other longitudinal effect. Given the inconsistent and sporadic gender moderation effects for the longitudinal analyses—in conjunction with the relatively small portion of the sample that was male—I am inclined to interpret these gender effects as sampling error as opposed to representing true population effects.

[4] Thus, if a participant completed Wave 2 six days after Wave 1, the "Time" variable would be 6/30 = 0.20 for them.

[5] All associations withstood controlling for the relevant Wave 1 trait, ruling out regression to the mean as an alternative explanation.

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