# Viral videos and virtue: Moral elevation inductions shift affect and interpersonal goals in daily life

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#### **ABSTRACT**

Laboratory studies suggest that witnessing virtuous acts triggers moral elevation, an emotion characterized by feeling uplifted and increased prosocial motives. However, it remains unknown whether regular inductions can increase elevation and prosocial motives in daily life without being vulnerable to habituation or adaptation effects. Participants (total N = 181) were randomly assigned to elevating vs. neutral or amusing inductions (video or recall tasks) for seven days (Study 1), ten days (Study 2), or 12 days over one month (Study 3). Multilevel growth models showed that relative to comparison conditions, elevation inductions increased daily elevation, positive affect, and prosocial outcomes (compassionate goals and affiliation), and decreased self-protective motives (self-image goals). Adaptation effects occurred for immediate responses when exercises occurred daily, but not when spaced out over time, and not for outcomes measured later each day. Results suggest benefits of brief, regular elevation experiences and have implications for interventions targeting specific emotions.

#### **KEYWORDS**

Moral elevation; compassionate goals; self-image goals; virtue; positive affect

#### **CITATION**

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#### **Elevation-Specific Interventions**

Basic research on positive emotions has naturally led to interventions targeting such states (e.g., Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008; Nelson, Layous, Cole, & Lyubomirsky, 2016), followed by recent multi-component interventions to increase positive emotions broadly in clinical samples (e.g., Taylor, Lyubomirksy, & Stein, 2017). However, it remains important to elucidate the effects of narrower, emotion-specific interventions. The most well-researched example is gratitude; regular journaling about one's blessings increases grateful feelings, positive affect, and prosocial outcomes, and early studies (Emmons & McCullough, 2003) tested simple interventions that later translated to clinical populations (e.g., Otto, Szczesny, Soriano, & Laurenceau, 2016). However, no studies have tested interventions over

time to promote moral elevation, an emotion theorized to trigger prosocial motivation and enhance well-being (Haidt, 2000, 2003; Tangney, Stuewig, & Mashek, 2007). Addressing this issue, our aim, would provide a foundation for potential future clinical applications and may have implications for attempts to repeatedly elicit other positive emotions as well.

#### **Moral Elevation**

Moral elevation has been conceptualized as an 'other-praising' moral emotion in the family of awe (Haidt, 2003; Keltner & Haidt, 2003), triggered in response to the 'moral beauty' of another person's virtuous acts toward a third party (e.g., generosity; Haidt, 2000). This contrasts with prototypical awe associated with perceived smallness in the face of something vast (e.g., a mountain; Piff, Dietze, Feinberg, Stancato, & Keltner, 2015), or gratitude, triggered by receiving generosity (Emmons & McCullough, 2003). Elevation is subjectively experienced as feeling uplifted, moved, or inspired by others, accompanied by chest warmth and sometimes tears, a lump in the throat, or chills (Algoe & Haidt, 2009; Aquino, McFerran, & Laven, 2011; Landis et al., 2009; Silvers & Haidt, 2008).

Elevation is theorized to motivate an affiliative action tendency to help others, emulate virtue, and become a better person (Algoe & Haidt, 2009; Haidt, 2003). Accordingly, self-reported elevation predicted volunteer engagement (Cox, 2010) and altruism beyond Five-Factor Model traits (Landis et al., 2009). Lab inductions increased prosocial motives (Algoe & Haidt, 2009), maternal nurturance (Silvers & Haidt, 2008), and willingness to donate or volunteer (Freeman, Aquino, & McFerran, 2009; Schnall & Roper, 2012; Schnall, Roper, & Fessler, 2010). In addition, as an emotion theorized to shrink the self (Keltner & Haidt, 2003), induced elevation increased spiritual transcendence (Van Cappellen, Saroglou, Iweins, Piovesana, & Fredrickson, 2013) and decreased prejudice (Lai, Haidt, & Nosek, 2014). Moreover, elevation's effects can be discriminated from the moral emotion of gratitude (Algoe & Haidt, 2009). However, research has been limited to correlational and one-time lab experiments, leaving the effects of regular induction exercises in daily life unknown.

# Reasons to Induce Elevation Experimentally in Daily Life

Several reasons exist for testing elevation interventions outside of the lab. First, regular elevation may be intrinsically desirable. Appreciation of beauty, including moral beauty, is a core virtue thought to facilitate flourishing (Peterson & Seligman, 2004) and moral development (Diessner, Parsons, Solom, Frost, & Davidson, 2008). Relevant exercises may make individuals more sensitive to moral beauty and prone to elevation. Haidt (2003) cited Thomas Jefferson's (1771/1975) claim that regular exposure to portrayals of virtue in literature exercises one's disposition toward virtue, analogous to strength training. Also, self-reported elevation, like happiness (Sheldon & Lyubomirsky, 2012), may be valued in its own right. Elevation is a quintessential positive state theorized to push an 'emotional reset button' (Haidt, 2003) that may produce positive affect (PA) and undermine negative affect (NA; Fredrickson, 2001).

Second, the motivations theorized to be triggered by elevation map onto interpersonal goals with demonstrated relevance to wellbeing. Crocker and Canevello (2008) theorized that strivings to help others (compassionate goals) versus to promote/defend desired self-images (self-image goals) build and undermine relationships and well-being, respectively. People with high daily compassionate goals experienced prospective increases in support from roommates and decreased distress, whereas high self-image goals undermined support and predicted negative emotions (Crocker & Canevello, 2008; Crocker, Canevello, Breines, & Flynn, 2010).

Adopting compassionate goals during a social stress task reduced cortisol and increased affiliative behavior (Abelson et al., 2014). Also, daily elevation predicted higher same-day and lagged compassionate goals (Erickson & Abelson, 2012), suggesting links of elevation to such goals. However, despite downstream benefits of high compassionate and low self-image goals, simple ways to shift these goals in daily life are lacking, but repeated elevation may comprise a strong candidate given its theorized action tendency toward helping others and self-transcendence.

# Theoretical and Practical Considerations for Elevation Induction Exercises Specificity

To test whether elevation inductions will influence these theorized emotional/motivation effects in daily life, suitable control groups are warranted. Past lab studies utilized uplifting videos or cued recall, in comparison to emotionally neutral videos or memories (i.e., interesting without evoking strong emotion), to control for attention and activity. Also, lab studies have compared elevation to amusement (or 'mirth') via entertaining/humorous videos or memories, given that amusement is similarly positive in valence but not theorized to motivate helping or transcendence (Shiota, Campos, & Keltner, 2003); this may also control for demand characteristics given that both types of stimuli are positive. Several lab studies found effects unique to elevation beyond this positive emotion (Algoe & Haidt, 2009; Silvers & Haidt, 2008; Schnall et al., 2010; Van Cappellen et al., 2013). Studying elevation inductions over time warrants comparison to neutral and amusing conditions.

# Hedonic Adaptation vs. Accumulation

The theory of hedonic adaptation suggests that repeated exposure to mood enhancing situations facilitates initial positive emotion then eventual return to baseline as the new state becomes 'normal' (Lyubomirsky, Sheldon, & Schkade, 2005). Analogously, habituation – decrease of immediate physiological response to emotional stimuli – may occur for subjective emotions (Leventhal, Martin, Seals, Tapia, & Rehm, 2007) and physiological reactivity (Bradley, Lang, & Cuthbert, 1993). Alternatively, effects of repeated inductions might build or accumulate over time, consistent with Haidt's (2003) theory that regular exposure to others' virtuous behavior may exercise and strengthen virtuous dispositions. This parallels the theory of accumulation of emotional capital, which posits that positive experiences in relationships accumulate over time to facilitate interpersonal satisfaction (Walsh, Neff, & Gleason, 2017). Accumulation would imply that repeated inductions should promote increased trait level sensitivity to moral beauty and elevation.

Alternatively, both adaptation and accumulation effects may occur, depending on timing of assessment and exercises. Decreasing effects of stimuli most often occur for immediate emotional and physical responses (e.g., Leventhal et al., 2007), but may be less likely for effects measured later in the day (sustained effects). Even if the immediate intensity of emotional response right after videos decreases across daily inductions, individuals may still report higher lingering elevation and associated motivations later in the day. Thus, adaptation effects may be more likely for assessments immediately following inductions than for those later in the day. Additionally, increasing the spacing between positive emotion inductions (Lyubomirsky et al., 2005) and variety in activities (Sheldon & Lyubomirsky, 2012) has curtailed adaptation in some studies. We therefore predict that spreading out elevation inductions during the week and

increasing variety (mixing videos with recall tasks) may prevent adaptation in immediate effects and permit accumulating effects on emotion and motivation over time.

# **The Present Studies**

Three experiments examined whether elevation inductions cause theory-consistent effects in naturalistic contexts over time. We tested whether morning elevation inductions influenced (a) immediate elevation, and (b) sustained (afternoon/evening) effects on emotions and social variables. Study 1 tested effects of elevation videos for seven days, relative to neutral videos, on immediate elevation and sustained elevation and interpersonal goals measured later in the day. Study 2 tested elevating videos over ten days, with both neutral and amusing videos as control groups. Lastly, Study 3 tested elevation vs. amusement groups using mixed exercises (videos and cued recall) less frequently (3 times per week) over one month.

First, we hypothesized group effects on emotion, that elevation exercises would lead to higher immediate and sustained elevation feelings vs. comparison conditions in all studies, and higher daily PA and lower NA. Second, based upon elevation's theorized motivational effects (Haidt, 2003), we hypothesized that elevation inductions would cause higher sustained compassionate goals and affiliation and lower self-image goals. Lastly, we hypothesized effects related to change: Based on theories of adaptation/habituation, we expected linear decrease in immediate effects for elevation when videos occurred daily (Study 1 and 2), whereas mixing video/recall tasks and increasing spacing would prevent adaptation for immediate effects (Study 3). In addition, we hypothesized that for sustained effects, when inductions were less frequent (Study 3), elevation exercises would take longer to increase compassionate goals and affiliation and decrease self-image goals, but would still promote increased trait proneness to feeling elevated in response to moral beauty, as well as increased PA and decreased NA, based on the idea that effects of repeated elevation exercises may accumulate, shift traits, and promote well-being (Haidt, 2003).

# Study 1

#### **Overview**

Study 1 tested whether video-based elevation inductions used in past lab studies generalize to a naturalistic context, with random assignment to elevating vs. neutral videos for seven days.

#### Method

# **Participants**

Psychology students (N = 60) at a private university in the Pacific Northwest participated for credit (45 women;  $M_{age} = 19.08$ , SD = 1.83). They identified as White (44), Asian (9), African American (2), Hispanic or Latino/a (1), Pacific Islander (1), biracial (2), or declined (1).

#### Procedure

After informed consent, participants completed online pretest surveys and were randomly assigned to elevation (n = 32) or neutral (n = 28) groups. For seven days, participants received email links at 6 am to a new video and measures of immediate effects, to complete by noon. Participants were instructed to minimize distractions and attend to emotions during videos. Afterward, participants free-reported motivations ('What did you feel like doing after watching the video?') and 1–3 ways they could pursue such motives that day. Participants rated immediate

elevation (see below). They received links to sustained measures at 6 pm to complete at least six hours postinduction. Monitoring suggested reasonable compliance in Study 1 (98%), 2 (84%) and 3 (98%); missing a day triggered reminders to resume the next day.

Elevating videos (M = 5.92 min/day) depicted virtuous actions (e.g., a father pulling his paralyzed son in marathons, a teenager helping others escape gangs, and athletes with disabilities displaying courage). Neutral videos (M = 5.75 min/day) were chosen to evoke only interest (e.g., how gold chains or marbles are made). Videos were used in past elevation research (e.g., Silvers & Haidt, 2008), validated in pilot work (Smith, 2010), and further validated here via six blinded assistants rating videos (6-point scale from not at all to extremely) on Peterson and Seligman's (2004) descriptions of virtues of courage (ICC = 0.78), humanity (e.g., kindness; ICC = 0.95), justice (ICC = 0.77), temperance (ICC = 0.81), transcendence (ICC = 0.92), and intellectual virtues (ICC = 0.30).1 Due to low inter-rater reliability we omitted intellect. In independent samples t-tests, elevating videos were higher than neutral videos (all p < 0.005) on courage (d = 4.65), transcendence (d = 3.75), humanity (d = 3.38), justice (d = 2.84), and temperance (d = 2.03).

#### Measures

**Pretest**. We assessed pretest elevation and goals (see below) to ensure group equivalence.

**Immediate Induction Effects**. Immediate responses were rated on a 0 (not at all) to 5 (extremely) scale. The mean of morally uplifted, inspired, warmth in the chest, lump in the throat, chills/tingles, and tears in the eyes assessed feelings of elevation (mean  $\alpha = 0.83$ , SD = 0.05).

#### **Sustained Effects**

**Brief Elevation Index.** Participants rated feeling uplifted by others, moved by others, and inspired by others during the afternoon/evening, on a 1 (not at all) to 5 (extremely) scale. This index correlated r = 0.76 (p < .001) with a longer measure of daily elevation (Erickson & Abelson, 2012) in this research.

Self-Image and Compassionate Goals (Crocker & Canevello, 2008). Participants rated how much, in interactions with others each afternoon/evening, they wanted to or tried to pursue goals on a 1 (not at all) to 5 (extremely) scale. Self-image goals (six items;  $M \alpha = 0.83$ , SD = 0.05) included approach ('get others to recognize or acknowledge your positive qualities') and avoidance goals ('avoid being rejected by others'). Compassionate goals (seven items;  $M \alpha = 0.92$ , SD = 0.02) included approach ('be supportive of others') and avoidance goals ('avoid doing anything that would be harmful to others'). We residualized goals (removed shared variance) to control for non-specific goal striving, consistent with past studies (Crocker & Canevello, 2008).

#### Results

**Preliminary Analyses.** Data inspection supported multivariate assumptions. Participants averaged 6.28 records (SD = 1.15; total = 385); 91% had complete data. Five multiple imputations were pooled. At pretest, groups did not differ on elevation or goals (ps = .10-.78).

**Overview of Analyses**. Unless otherwise noted, all studies tested hypotheses via multilevel modeling (MLM) given repeated assessments (level 1) nested within participants (level 2). MLM handles data non-independence and variable timing. Time was centered at the study midpoint (subtracting 3.5), so group effects reflected different mean trajectories. Group

was coded as 1 (elevation) or 0 (neutral). We modeled random intercepts and time slopes (restricted maximum likelihood estimates), given significant variance in unconditional models. Based on fit, we adopted conservative covariance structures and linear (not quadratic/cubic) time effects.

In all studies, we tested Group, Time, and Group × Time effects. Between-group effect sizes were calculated as  $d = t\sqrt{(n1 + n2)/(n1*n2)}$ . In all three studies, controlling for gender did not change the pattern of results so we report models without gender.

**Immediate Effects**. As hypothesized, elevation inductions caused higher trajectories (Group effects) for elevation (d = 2.92) following videos, relative to the neutral condition (see Table 1 for parameter estimates). No Time effects were significant. A Group x Time interaction was present for elevation, which decreased in the Elevation group, B = -0.13, SE = 0.03, 95% CI [-0.20, -0.07], p < .001, but only marginally in the Neutral group, B = -0.05, SE = 0.02, 95% CI [-0.10, 0.01], p = .051.

**Sustained Effects**. As hypothesized, relative to the neutral groups, the elevation group reported higher afternoon/evening elevation feelings (d = 0.65) and compassionate goals (d = 0.63), and lower self-image goals (d = -0.64), with no Time or Group × Time effects (see Figure 1).

# Summary

Elevation video inductions can be translated into naturalistic contexts. They caused higher daily immediate and sustained elevation, relative to neutral videos. In addition, this was the first study to show that elevation can not only increase compassionate goals, but also decrease self-image goals. Adaptation effects were present for elevation immediately after videos, but not for sustained effects over repeated inductions. However, Study 1 left open questions of specificity of effects for elevation.

Table 1. Parameter estimates for effects of group and time on immediate and sustained outcomes for Study 1	1.

	Elevation vs. Neutral Group				Time		$Group \times Time$			
Sustained outcome b (SE)		95% CI	р	b (SE)	95% CI	р	b (SE)	95% CI	р	
Immediate outcome										
Elevation	1.78 (0.16)	1.45, 2.07	< 0.001	-0.05 (0.03)	-0.11, 0.01	0.103	-0.09(0.04)	-0.17, -0.002	<0.048	
Sustained outcome										
Elevation	0.31 (0.12)	0.07, 0.56	0.012	-0.06(0.07)	-0.19, 0.08	0.420	0.00 (0.10)	-0.18, 0.19	0.978	
Compassionate goals	0.33 (0.14)	0.06, 0.60	0.016	-0.02(0.09)	-0.20, 0.16	0.853	-0.02(0.12)	-0.26, 0.23	0.893	
Self-image goals	-0.28 (0.11)	-0.51, -0.06	0.014	0.01 (0.08)	-0.14, 0.16	0.870	0.01 (0.10)	-0.20, 0.21	0.946	

Notes: Random slopes for time. Interpersonal goals were residualized to control for goal striving in general. CI = Confidence Interval. The p-values below the traditional cutoff of .05 are bolded.

# Study 2

#### Overview

Study 2 tested the specificity of elevation inductions beyond both neutral and amusing videos over 10 days, and incorporated a different measure of daily elevation as well as measures of daily PA and NA to test emotional effects more broadly.

#### Method

#### **Participants**

Psychology students (N = 95 [72 women];  $M_{age} = 19.23$ , SD = 2.00) identified as White (70), Asian American (12), Hispanic or Latino/a (6), African American (2), Pacific Islander (1), or did not self-identify (2).

#### **Procedure**

Procedures mirrored Study 1 except that participants were randomized to elevating (n=31), amusing (n=33), or neutral videos (n=31) for 10 days. Videos from Study 1 were supplemented with others chosen based on assistants' content validity ratings. Independent samples t-tests showed that elevating stimuli were again significantly higher (p < 0.005) than amusing clips on virtues of humanity (d=2.94), justice (d=2.40), courage (d=2.34), and transcendence (d=2.22). Elevating videos (M=3.42 min/day) featured, for instance, a softball player being carried around bases after an injury and a teenager creating graffiti artwork for his ill sister. Amusing videos (M=3.25 min/day) included children singing/dancing/ talking about kittens, stand-up comedy, and 'flash-mobs' singing in public. Neutral videos (M=3.98 min/day) featured historical events and how-to videos (e.g., pie-making). Videos from Study 1 were presented in a different order.

#### Measures

**Pretest**. Participants reported pretest elevation to ensure equivalence.

# **Immediate Induction Effects**

**Elevation**. Participants rated the same immediate elevation items after videos as in Study 1 (M daily  $\alpha = 0.85$ , SD = 0.06).

# **Sustained Effects (Afternoon/Evening)**

**Daily Elevation**. Five items on a 1 (not at all) to 5 (extremely) scale assessed afternoon/evening elevation (Erickson & Abelson, 2012), including feelings (morally uplifted or inspired by the actions of others), social cognition (in touch with the higher or better parts of myself), and motives (motivated to live in a noble or virtuous way). Items (M daily  $\alpha = 0.93$ , SD = 0.02) showed convergent validity with values and had minimal social desirability (Erickson & Abelson, 2012).

**Self-Image and Compassionate Goals** (Crocker & Canevello, 2008; Study 1). Participants rated the same goals as in Study  $1(M \alpha = 0.83, SD = 0.05; M \alpha = 0.87, SD = 0.08)$ .

**Positive and Negative Affect Schedule (PANAS)-Brief Version** (Mackinnon et al., 1999; Watson, Clark, & Tellegen, 1988). We assessed positive affect (PA) on a 1 (very slightly or not at all) to 5 (extremely) scale as the mean of alert, excited, enthusiastic, determined, excluding inspired to avoid overlap with elevation (M daily  $\alpha = 0.85$ , SD = 0.03). The mean of afraid, upset, nervous, scared, distressed (M  $\alpha = 0.82$ , SD = 0.03) assessed NA.

#### Results

**Preliminary Analyses.** Data inspection supported multivariate assumptions. Participants completed a mean of 8.79 days (SD = 1.99), totaling 844 records (83% completed all entries). Multiple (five) imputation handled missing data. Groups did not differ on pretest elevation (p = .475).

**Overview.** Dummy coding facilitated testing of Group effects, with elevation as the base category (0, 0) so that neutral vs. elevation (NvE; 0, 1) and amusement vs. elevation group (AvE; 1, 0) effects reflected deviations from the elevation group (sign reversed, so positive coefficients reflect higher outcomes for the elevation group). Analyses were the same as in Study 1, but with both Group (NvE, AvE) terms, Time, Time × NvE, and Time × AvE terms entered.

**Immediate Effects<sup>2</sup>.** As hypothesized, the elevation group endorsed higher post-video elevation than the neutral (d = 3.58) or amusement (d = 3.03) groups (see Table 2). Time main

effects showed average decreases in elevation. The Neutral vs. Elevation Group (NvE) × Time interaction was significant, as hypothesized, and the Amusement vs. Elevation (AvE) Group × Time interaction was marginally significant. Elevation decreased in the elevation (b = -0.07, SE = 0.02, 95% CI [-0.10, -0.03], p < .001), but not neutral (b = 0.01, SE = 0.01, [-0.01, 0.03], p = .231) or amusement groups (b = -0.01, SE = 0.01, [-0.03, 0.01], p = .164).

**Sustained Outcomes**. As hypothesized, neutral (d = 0.76) and amusement (d = 0.66) groups both endorsed lower afternoon/evening elevation and PA (d = 0.68) and 0.64) than the elevation group (See Table 2 and Figure 1). Unexpectedly, there was no Group effect on NA. Neutral (d = 1.29) and amusement groups (d = 0.62) caused less compassionate goals than the elevation condition, as hypothesized. The elevation group caused lower self-image goals relative to the neutral group (d = -0.56) as predicted, but not relative to the amusement group (d = -0.10), against hypotheses. As expected, no Time or Group x Time interactions emerged; exercises shifted sustained emotion without adaptation.

#### Summary

Study 2 replicated Study 1 by showing that elevation exercises led to higher immediate elevation, sustained elevation, and compassionate goals, and lower self-image goals, relative to neutral exercises, over 10 days. Moreover, Study 2 provided evidence of specificity beyond the positively-valenced comparison condition of amusement; elevation led to higher immediate and sustained elevation, compassionate goals, and PA (but not lower self-image goals or NA). Adaptation effects were evident for elevation immediately after inductions, but not for sustained outcomes, replicating Study 1.

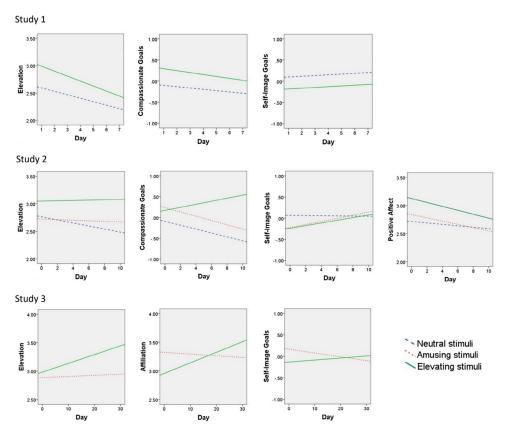


Figure 1. Graphs of group and time effects on sustained outcomes across studies.

Table 2. Parameter estimates for effects of group and time on immediate and sustained outcomes for Study 2.

	Neutral vs. Elevation Group (NvE)			Amusement vs. Elevation group (AvE)				Time			NvE × Time			AvE × Time		
	b (SE)	95% CI	р	b (SE)	95% CI	р	b (SE)	95% CI	р	b (SE)	95% CI	р	b (SE)	95% CI	р	
Immediate outcome																
Subjective elevation	1.82 (0.13)	1.57, 2.07	< 0.001	1.54 (0.13)	1.30, 1.79	< 0.001	-0.05(0.01)	-0.08, $-0.02$	0.001	-0.06(0.02)	-0.10, -0.02	0.003	-0.04(0.02)	-0.09, -0.01	0.081	
Sustained outcome																
Daily elevation	0.35 (0.11)	0.12, 0.57	0.003	0.32 (0.12)	0.08, 0.56	0.011	0.00 (0.10)	-0.20, 0.20	0.985	-0.00(0.08)	-0.17, 0.16	0.969	-0.01(0.08)	-0.17, 0.15	0.873	
Positive affect	0.24 (0.09)	0.06, 0.41	0.008	0.22 (0.08)	0.05, 0.38	0.012	0.01 (0.04)	-0.07, 0.10	0.723	-0.02(0.04)	-0.09, 0.05	0.577	-0.02(0.03)	-0.09, 0.04	0.507	
Negative affect	-0.06 (0.15)	-0.35, 0.25	0.661	-0.05(0.14)	-0.33, 0.22	0.698	-0.01(0.01)	-0.04, 0.02	0.376	-0.001 (0.02)	-0.04, 0.04	0.992	0.01 (0.01)	-0.04, 0.03	0.734	
Compassionate goals	0.74 (0.14)	0.46, 1.02	< 0.001	0.34 (0.14)	0.07, 0.61	0.013	-0.12(0.13)	-0.37, 0.14	0.376	0.08 (0.11)	-0.13, 0.29	0.466	0.06 (0.10)	-0.15, 0.27	0.574	
Self-image goals	-0.20 (0.10)	-0.40, -0.02	0.034	-0.04 (0.10)	-0.23, 0.15	0.703	-0.02 (0.07)	-0.15, 0.11	0.744	0.03 (0.05)	-0.08, 0.13	0.616	-0.02 (0.05)	-0.09, 0.12	0.765	

Notes: All random slopes unless noted. No random time slopes for positive affect or compassionate goals. Interpersonal goals were residualized. Inspired was omitted from the positive affect measure to avoid construct overlap with elevation. Effect signs were reversed such that positive effects indicate higher scores for elevation relative to comparison conditions. CI = Confidence Interval.

The p-values below the traditional cutoff of .05 are bolded.

# Study 3

#### Overview

However, Study 2 left unaddressed whether such specificity would occur when exercises are conducted over a longer time period, whether increasing spacing and variety (interspersing videos with recall tasks) would curtail adaptation for immediate effects, and whether repeated inductions may influence trait proneness to elevation. Therefore, a final study compared elevation vs. amusement in three exercises per week for four weeks. We assessed social affiliation as an additional theorized outcome of elevation (Haidt, 2003), and incorporated pretest and posttest measures of PA, NA, and trait proneness to experience elevation in order to examine changes over time.

## Method

# **Participants**

Participants included 44 undergraduate psychology students (34 women; mean age = 21.70, SD = 4.06). Participants identified as White (24), Asian American (7), African American (4), Hispanic or Latino/a (4), Multiracial (4), or declined to respond (1).

## Procedure

Procedures paralleled Studies 1 and 2, but participants were randomized to elevation (n = 23) and amusement conditions (n = 21) and received links to tasks on Monday, Wednesday, and Friday for four weeks. Video stimuli were taken from Study 2 in alternate order (mean of 3.60 and 3.27 min/day, respectively). For variety, on the third, fifth, and tenth day, participants were asked to recall 'a specific time when you witnessed humanity's higher or better nature, such as someone being generous, self-sacrificing, or brave' (vs. '... witnessed something very funny, amusing, or entertaining'), and to write for five minutes about it.

#### Measures

#### **Pretest & Posttest Measures**

Engagement with Beauty Moral Beauty Subscale (EBS; Diessner et al., 2008). This 6item scale assesses trait-like elevation when witnessing moral beauty ('an impressive act of charity, loyalty, kindness, compassion, forgiveness, sacrifice, or sincere service to others'). Participants rated the tendency to notice moral beauty and experience associated physical changes, upliftment, spirituality, and motivation to become a better person or do good deeds, on a 1 (very unlike me) to 7 (very much like me) scale. Diessner et al. (2008) documented reliability and validity ( $\alpha = 0.81, 0.83$  in this study).

**Positive and Negative Affect Schedule** (Watson et al., 1988). The PANAS assessed PA and NA for the past week at pretest and posttest. PA ( $\alpha = 0.83, 0.79$ ) and NA ( $\alpha = 0.80, 0.88$ )

were each measured via 10 items. We included inspired given broader construct coverage due to having more items.

**Immediate Effects.** After exercises, participants rated elevation (morally uplifted, inspired; mean daily  $\alpha = 0.86$ , SD = 0.04) and amusement (amusement/humor, entertained; mean  $\alpha = 0.90$ , SD = 0.02).

**Sustained (Afternoon/Evening) Effects.** Participants completed daily elevation items (mean  $\alpha = 0.86$ , SD = 0.07) and social goals as in Study 2 ( $M \alpha = 0.86$ , SD = 0.04;  $M \alpha = 0.84$ , SD = 0.06). They rated affiliation (mean of social, sociable, close to others, outgoing, connected to others) on a 1 (not at all) to 5 (extremely) scale, mean  $\alpha = 0.91$ , SD = 0.03. The items had unifactorial structure and convergent validity (Erickson et al., 2017).

#### Results

**Preliminary Analyses**. Prescreening supported statistical assumptions. Participants averaged 11.14 records (SD = 2.20; total = 470), with 92% of data present. Multiple imputation handled missing data. Groups did not differ at pretest on any outcomes. Additionally, recall and video inductions did not differ on immediate elevation induced.

**Immediate Effects**. As hypothesized, the elevation group felt more elevated after exercises (d = 4.46); the amusement group reported higher amusement (d = 4.70; see Table 3 and Figure 1). No Time or Group x Time effects were present, suggesting that spacing out and varying elevation exercises prevented adaptation in immediate reactions to stimuli.

**Sustained Outcomes**. As hypothesized, the elevation group reported lower daily self-image goals (d = -0.42). Contrary to expectations, the groups did not differ significantly on levels of daily (sustained) elevation (d = 0.21), compassionate goals (d = 0.20), or affiliation (d = 0.34) although some effects were in the expected direction. No Time effects were present.

As predicted, Group and Time interacted on sustained elevation and affiliation. Elevation increased for the elevation group (b = 0.01, SE = 0.004, 95% CI [0.002, 0.02], p = .009) but marginally decreased for the amusement group (b = -0.01, SE = 0.004, [-0.02, 0.00], p = .078). Affiliation increased in the elevation (b = 0.02, SE = 0.005, [0.01, 0.03], p = .003) but not the amusement group (b = 0.00, SE = 0.01, [-0.02, 0.01], p = .341). Unexpectedly, interactions were not present for interpersonal goals.

**Pretest-Posttest Changes**. Linear regressions tested whether Group predicted posttest affect and trait proneness to elevation (EBS), beyond pretest scores (residual change). Pretest EBS did not predict posttest EBS (b = 0.22, SE = 0.18, 95% CI [-0.14, 0.58], sr = .19, p = .219), but elevation Group predicted residual increases in EBS, as hypothesized (b = 5.19, SE = 1.70, [1.73, 8.64], sr = .45, p = .004). Similarly, elevation group predicted residual increase in PA (b = 4.96, SE = 1.38, [2.16, 7.76], sr = .45, p = .001) beyond pretest PA predicting posttest PA (b = 0.57, SE = 0.12, [0.33, 0.81], sr = 0.60, p < .001). Contrary to hypotheses, group did not predict decreases in NA (b = -1.56, SE = 1.60, [-4.81, 1.70], sr = -.12, p = .338) beyond pretest NA predicting posttest NA (b = 0.71, SE = 0.13, [0.43, 0.96], sr = .68, p < .001). Thus, elevation exercises uniquely led to increased PA and trait proneness to moral elevation.

## Summary

Spacing out tasks and increasing task variety reduced adaptation effects for immediate elevation and changed the pattern of sustained outcomes. Elevation inductions caused lower levels of daily self-image goals, consistent with Studies 1 and 2, and added to Study 2 by showing specificity in this effect beyond amusement. Inductions thrice weekly over one month

led to no group effects, but increases in sustained elevation and affiliation, as well as pre-post increases in PA and engagement with moral beauty, suggesting accumulation.

<b>Table 3.</b> Parameter estimates	for effects of gr	oup and time on	immediate and	l sustainec	d outcomes f	for Study 3.
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	Elevation vs. A	musement grou		Time		Group × Time			
	b (SE)	95% CI	р	b (SE)	95% CI	р	b (SE)	95% CI	р
Immediate outcome									
Elevation	1.86 (0.13)	1.61, 2.11	< 0.001	0.01 (0.01)	-0.01,0.04	0.418	-0.01 (0.02)	-0.04, 0.03	0.689
Amusement	-2.03 (0.13)	-2.52, -1.65	< 0.001	0.02 (0.01)	-0.01, 0.04	0.251	0.01 (0.02)	-0.02, 0.05	0.502
Sustained outcome									
Daily elevation	0.13 (0.19)	-0.25, 0.51	0.492	0.00 (0.00)	-0.01, 0.01	0.632	0.01 (0.01)	0.01, 0.03	0.031
Social affiliation	-0.22 (0.19)	-0.60, 0.16	0.262	0.00 (0.01)	-0.01, 0.01	0.370	0.02 (0.01)	0.01, 0.03	0.005
Compassionate goals	0.05 (0.11)	-0.17, 0.27	0.631	0.00 (0.07)	-0.13, 0.14	0.947	0.00 (0.10)	-0.19, 0.19	0.990
Self-image goals	-0.30 (0.13)	-0.55, -0.05	0.019	-0.02 (0.08)	-0.18, 0.14	0.836	0.02 (0.12)	-0.20, 0.25	0.832

Notes: Random slopes for time with the exception of affiliation. Goals were residualized. CI = Confidence Interval. The *p*-values below the traditional cutoff of .05 are bolded.

#### **General Discussion**

The present studies, the first to induce moral elevation outside of the lab, showed that lab induction tasks generalized to daily life. We tested elevation compared to neutral exercises over seven days (Study 1), neutral or amusing exercises over ten days (Study 2), and amusing exercises three times weekly for one month (Study 3). Across studies, reflection on elevating videos or memories caused higher trajectories of feeling immediately uplifted than neutral (Studies 1 and 2) or amusing stimuli (Studies 2 and 3), and higher sustained (> six hours later) elevation relative to neutral (Studies 1 and 2) or amusing (Study 2) videos. Spaced out inductions (Study 3) did not cause higher sustained elevation during initial days, but led to increased sustained elevation over four weeks. Although the half-life of inductions is not yet known, brief elevation inductions may linger for at least several hours, extending lab-based studies of immediate effects (e.g. Schnall et al., 2010). In addition to this specific emotion, elevation inductions led to higher daily positive affect than did amusing clips over 10 days (Study 2) and to greater pre-post increase in weekly positive affect over one month (Study 3), parallel to other studies finding that gratitude (Emmons & McCullough, 2003) and lovingkindness (Fredrickson et al., 2008) influenced affect broadly.

Beyond subjective emotion, repeated inductions shifted daily social goals in theoryconsistent ways. In Studies 1 and 2, elevation participants endorsed higher compassionate goals during afternoons (striving to help others during social interactions), relative to neutral and amusement groups. This effect was not present when exercises occurred thrice weekly (Study 3), suggesting that more frequent dosing may be required to elicit and sustain these prosocial goals. However, participants in Study 3 reported increasing social affiliation over time as expected. In addition, elevation exercises reduced striving to promote or protect desired self-images (selfimage goals) relative to neutral (Study 1 and 2) groups, as hypothesized. Elevation unexpectedly did not cause lower self-image goals than amusement in daily exercises (Study 2), but caused lower self-image goals than amusement when exercises were spaced three times weekly (Study 3). Future research should clarify whether this discrepancy can be explained by the timing of exercises. Nonetheless, the pattern of findings fits the theorized action tendency of elevation toward helping others and self-transcendence (Haidt, 2003), but few studies have examined the latter. In one study, elevation promoted helping others even after a 'selfish' self-affirmation, but even more after prosocial self-affirmations (Schnall & Roper, 2012). Whereas Van Cappellen et al. (2013) found increased spiritual transcendence, ours is the first study to show effects on selfimage goals, and particularly the capacity to decrease these goals. Causal effects of elevation on compassionate and self-image goals are noteworthy given their documented prospective relevance on relational and emotional well-being (Crocker et al., 2010).

Several findings pertain to the question of whether repeated inductions would cause adaptation vs. accumulation effects. The only time main effect showed that post-induction elevation decreased in Study 2, but we disregard this as it ignores condition. However, several group by time interactions suggested adaptation in immediate effects of inductions. Despite new videos daily, the intensity of immediate elevation after videos decreased over time for the elevation group more than in comparison groups, during daily consecutive exercises (Studies 1 and 2), as expected given the passive nature of video induction. However, although the intensity of immediate elevation feelings declined, sustained reports of elevation, PA, and social motivations were not vulnerable to adaptation in any study. Moreover, as hypothesized, spacing out exercises thrice weekly and mixing videos with recall tasks (Study 3) curtailed adaptation for immediate elevation, consistent with the idea that variety and spacing may overcome this process (Leventhal et al., 2007; Lyubomirsky et al., 2005). Variety and spacing in Study 3 might also explain why the elevation group did not cause higher mean elevation and affiliation trajectories than the amusement condition (group effects), counter to hypotheses, but led to increases in sustained elevation and affiliation over one month as expected, similar to the accumulation of positive emotional benefits over time in relationships (Walsh et al., 2017). Intermittent doses took longer than daily exercises to impact some outcomes, somewhat similar to findings that multiple exercises on one day per week (e.g., gratitude, kindness) yielded greater happiness than spreading them throughout the week (Lyubomirsky et al., 2005). Both findings suggest further reason to explore the frequency and timing of dosing for positive emotion exercises. Nonetheless, despite a slower 'start,' exercises over one month (Study 3) increased trait proneness to elevation, as well as PA, compared to amusement inductions, suggesting not only specificity but also accumulation of emotional effects.

#### **Implications**

Individuals who regularly expose themselves to moral exemplars are likely to experience higher chronic elevation and prosocial tendencies, in line with websites showcasing a daily 'dose' of uplifting stories/videos. Whereas programs to increase compassionate states via meditation feature practice over several months (e.g., Fredrickson et al., 2008; Jazaieri et al., 2012), elevation inductions may provide a simpler, brief alternative. Our results cannot speak to longterm character change, but fit the Aristotelean theory that virtues are cultivated by regular exercise (Haidt, 2003; Kristjánsson, 2010). Existing character education programs suffered methodological problems (Was, Woltz, & Drew, 2006), but our findings suggest reasons to test elevation as a component of interventions to shape character.

Lastly, our results suggest potential applications to clinical populations. Depression and anxiety are characterized by self-image goals and low compassionate goals (e.g., Crocker et al., 2010). In a clinically depressed/anxious sample, daily elevation predicted higher compassionate goals and lower symptoms (Erickson & Abelson, 2012). Elevation lowered maladaptive self-image goals but not NA in the present study, underscoring the independence of PA and NA (Watson et al., 1988). Elevation inductions may influence goals which might exert downstream impact on depression and anxiety (Crocker et al., 2010), and PA itself is a target in clinical interventions (e.g., Taylor et al., 2017). Also, elevation exercises may supplement current strategies for enhancing motivation for treatment (Westra, 2004). Lastly, our findings of

specificity for elevation inductions beyond other positive states suggests the potential for moderate precision in targeting particular emotions and their associated motivation states.

#### Limitations

Several limitations warrant consideration. First, despite adequate power for medium effects, samples were small. Second, our research relied on self-reports, and future studies must assess behavioral outcomes; however, we note that the compassionate/self-image goals measure has correlated with peer reports (Crocker & Canevello, 2008) and stress hormones (Abelson et al., 2014). Third, videos constitute complex stimuli, often depicting people both in struggles and transcending them to help others; future research should clarify key features of narratives which mediate elevation effects. Also, Study 3 modified timing and induction type, which should be tested independently; nonetheless, the results answered our question of whether such strategies may overcome post-exercise adaptation. Finally, it is conceivable that some effects might be influenced by demand characteristics, given that we exposed participants to moral exemplars; however, such factors are more likely to explain increased prosocial goals than decreases in selfimage goals, and these goals each include both approach and avoidance facets, making demand characteristics unlikely to completely account for effects on goals. Also, amusing videos were more unambiguously positive than elevating videos (which often included loss or struggles) in preliminary content analyses (available upon request); therefore, if positive stimuli exerted demand for positive responses, then amusing conditions should have led to similar or larger effects on positive outcomes such as elevation and compassionate goals. It is also unlikely that effects were due self-affirmation, which may have synergistic effects with elevation (Schnall & Roper, 2012), given that elevation inductions focused on desirable behavior of others rather than the self.

Despite limitations, the present research established that simple exercises induced elevation in daily life across multiple studies and multiple measures of the construct, demonstrated theory-consistent motivational effects, and answered questions about adaptation vs. accumulation. As illustrated by open-ended responses, our results show that regular exposure to and reflection on virtuous acts can shift daily mood (e.g., 'I felt heart-warmed'), limit strivings for self-enhancement (e.g., 'Today I will not focus on myself') and increase prosocial goals (e.g., 'This video makes me want to do little things for people on a daily basis...to genuinely strive to be a good person and put others before myself').

#### Note

- 1. Other content ratings of video stimuli are available upon request.
- 2. Manipulation check data showing that amusement and elevation videos were perceived as relatively amusing/entertaining and depicting virtuous actions, respectively, are available upon request.

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