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Self-control linked with restricted emotional extremes



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ABSTRACT

Inhibiting inappropriate expressions of emotion is one function of self-control. Although such regulation may facilitate interpersonal interactions, individuals may inappropriately extend this emotional inhibition to other situations where emotional regulation is not needed. The current research examined the effects of individual differences in self-control on emotional fluctuations and emotional intensity. In particular, the current research examined whether individuals with more self-control may have constricted emotional experience across two studies. Results confirmed that individuals high in self-control showed fewer emotional fluctuations and less intensity. This suggests that emotional experience may be limited for those high in self-control. It is possible that having high levels of trait self-control, may in some cases come at the cost of an emotional life less rich in experience.

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1. Introduction

Experiencing a full range of emotions, including highs and lows, is basic to human existence. Indeed, research indicates that people who lack extreme emotional reactions may be impaired cognitively as well as emotionally (e.g., Bagby, Taylor, & Parker, 1994). Furthermore, a lack of emotional intensity on both positive and negative dimensions may lead to less satisfaction with life (Brebner, 1998). The value of experiencing positive emotion (Larsen, 2000) is something that may well be universal (e.g., search for happiness; Diener, 2000; Diener & Diener, 1996). Although the importance of a full range of emotions may be less apparent at first glance, inclusion of negative emotion may serve an essential functional role as well as an experiential one. That is, individuals who have less extreme emotional reactions may not only miss out on life experiences of enjoyment (e.g., Brebner, 1998), but may actually be less successful in some circumstances (e.g., goal-pursuit, Carver & Scheier, 1990; information-processing, Schwarz & Clore, 1996). We present evidence that highly self-controlled individuals may have less extreme reactions to emotional stimuli. This may have important implications for how people with self-control react to events, suggesting that having more self-control may not be an unmitigated blessing.

Emotion regulation is a form of self-control in which societally or personally unacceptable emotions may be inhibited or regulated (Baumeister, Heatherton, & Tice, 1994). Though there are many methods of emotion regulation, arguably most require at least some amount of inhibition (for inhibition, maintenance, or enhancement of a particular emotion; Thompson, 1990). For instance, current mood must be inhibited to prepare for anticipated social interactions, neutralizing extreme moods to conform appropriate levels of emotion for the expected interaction (Erber, Wegner, & Theriault, 1996). Thus, when control of emotion is needed, affect regulation can be adaptive. For instance, by adulthood, most people have internalized the inhibition of emotion when showing it would be unacceptable. Common examples include not throwing a temper tantrum in public, not laughing at a funeral, or not crying at a business meeting (Erber et al., 1996; Larsen & Prizmic, 2004). Previous research has shown that higher levels of trait self-control may have adaptive effects on emotional responding (for a review see Baumeister & Alquist, 2009; see also Baumeister et al., 1994). In contrast, the current work examines whether higher levels of self-control are always truly adaptive, specifically in the realm of emotions.

It is possible instead that over-generalization of emotional limitations could, at times, result in restricted emotions when there is no need to regulate emotion (e.g., lack of emotion as found in alexithymia; Bagby et al., 1994). Though the need to regulate one's emotions in certain circumstances is common, inhibiting emotions when unnecessary may lead to over-generalization of emotional control. Hence, some individuals may be quite skilled at controlling themselves; however, these individuals may generalize to contexts for which it is not needed. If so, those individuals

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high in self-control may inadvertently limit their emotional experiences in situations in which limitations are uncalled for or inappropriate.

Indeed, though considerable research has shown the benefits of self-control, not all theorists believe that the relationship is linear. Tangney, Baumeister, and Boone (2004) addressed concerns that an excess of self-control may *not* always be beneficial (overcontrol; Letzring, Block, & Funder, 2005) by testing for potentially curvilinear effects of self-control. Only linear relationships between self-control and outcome variables were identified, suggesting that more self-control led to better emotional outcomes (Tangney et al., 2004). For those high in self-control, imagined anger activation was reported as lower; scenario-based self-report measures indicated more functional moral emotions including more guilt and less shame; and self-control was positively correlated with self-reported emotional stability (Tangney et al., 2004). Thus, greater self-control led to less emotion for at least some emotions, especially negative ones.

The methods used by Tangney et al. (2004), however, did not directly measure emotional responding. The hypothetical scenarios used in their study elicited reports of how participants thought they might respond in emotion-inducing situations, rather than reporting real-time experience of emotion. Use of scenarios to simulate actual emotional responding increases the likelihood that participants may inadvertently report how they want or expect to respond rather than how they would actually respond to these situations. Furthermore, findings were based on clinical measures of problematic emotional reactions already considered extreme by virtue of their inclusion on the scale, rather than representative of an average emotional range of experience. The use of clinical measures makes generalizing these results to a healthy population questionable. Thus, in the current studies, we thought it important to test the effects of self-control using measures that were more representative of the general population. In addition, in our second study, we sought to induce emotion rather than evaluating solely hypothetical emotional responses.

1.1. Emotional dynamics

Although there are many components of emotion, we focus on two aspects of emotional dynamics basic to describing emotional responding: emotional fluctuations and emotional intensity (Thompson, 1990). Changes between positive and negative affect constitute emotional fluctuations (lability), whereas emotional intensity is the magnitude of positive (or negative) affect.

Emotional fluctuations may vary in frequency, speed, and range affect change (lability; Harvey, Greenberg, & Serper, 1989; Oliver & Simons, 2004). Lability has stable trait-like qualities over time, such that some individuals are more prone to emotional variations, such as extreme mood swings (Oliver & Simons, 2004). We hypothesize that individuals high in self-control may restrict the range and frequency of emotional fluctuations to avoid uncontrolled affective roller-coaster rides. Conversely, those with low-self-control may have a tendency toward more emotional fluctuations. Though not evaluated formally from a psychological standpoint, an observational study using pre-existing groups (Democratic versus Republican politicians) found that subscales for low self-control and increased lability were associated using a self-report adjective checklist (Constantini & Craik, 1980).

Emotional intensity has similarly been conceptualized as a trait-level characteristic (Larsen, Diener, & Emmons, 1986). Although hedonic level and emotional intensity are separable constructs (Larsen & Diener, 1985), individuals show a high correlation between intensity measures for positive and negative affect ($r = .70$ on average; Diener, Larsen, Levine, & Emmons, 1985). Measuring positive and negative shifts in emotion is one way to evaluate

the magnitude of emotional change. That is, emotion can be conceptualized as varying either positively or negatively from neutral (i.e., Positive and Negative Affect Schedule; Watson, Clark, & Tellegen, 1988). Individuals who are higher in self-control may be better able to regulate the intensity of their mood than people who are low in self-control (e.g., Tangney et al., 2004). This means that the range of emotion that people high in self-control may be restricted, even in situations where a full experience of emotion may be desirable. While there is evidence that individual differences can impact the ability to exert self-control (e.g., personality traits; Solberg Nes, Carlson, Crofford, de Leeuw, & Segerstrom, 2011), the opposite has yet to be examined as the current work proposes, which entails measuring the effects of individual differences in the trait of self-control.

1.2. Current research

With exception of the results noted, there has been no direct test of whether individual differences in self-control may impact emotional experience. The current research examines predicted links between high self-control, reduced emotional fluctuations, and reduced intensity. Thus, self-control may have the adverse effect of limiting emotional experience (decreased emotional intensity and fluctuations) in situations where regulation is unnecessary. In Study 1, we predicted that individuals high in trait self-control may adhere more to rules related to emotion expression, resulting in reduced tendencies toward emotional fluctuations and less emotional intensity.

2. Study 1: self-control and reduced emotional responding

Individuals who are better at self-regulation may control their emotions more frequently and more effectively, which may result in less variability in emotional experiences. In accordance with this hypothesis, individuals with higher trait self-control may experience a less extreme range of emotional experience. Specifically, this would entail a dampened experience of emotional intensity for those with higher levels of self-control. Thus, extreme emotional fluctuations should occur less frequently (decreased emotional lability) and be less severe (decreased intensity) for those higher in self-control. Conversely, if self-control limits emotional variance and reduces fluctuations, participants should also display greater emotional stability.

2.1. Method

2.1.1. Participants

Seventy participants (40 women) ranged from 18 to 21 years of age (median of 19). Ethnic and racial diversity were representative of the student population, with participants identifying as Caucasian (42.3%), Asian (11.3%), African American (16.9%), Hispanic (16.9%), and other (12.7%).

2.1.2. Procedure

Ethical standards were upheld for all studies in conjunction with Institutional Review Board approval and APA recommendations. Individuals were provided with study information and gave informed consent prior to administration of questionnaires, which were completed individually on a research laboratory computer. Self-report questionnaires assessed self-control, affective lability, affective intensity and emotional stability. Participants received credit in exchange for participation.

2.1.3. Measures

2.1.3.1. Self-control ($\alpha = .90$). The Self-Control Scale (Tangney et al., 2004; $\alpha = .89$) is a 36-item measure that assesses several aspects of trait self-control. Responses were rated on a 1–5 scale from (1) *not at all* to (5) *very much*.

2.1.3.2. Emotional lability ($\alpha = .90$). The Affective Lability Scale-Short Form (ALS-SF; Oliver & Simons, 2004; $\alpha = .90$) is an 18-item scale that measures emotional variability (e.g., emotional frequency, speed of change, and range of changes in affective states) based on participants' rating of how well statements describe themselves (e.g., I shift back and forth from feeling perfectly calm to feeling uptight and nervous) on a 4-point anchored rating scale from (1) *very undescriptive* to (4) *very descriptive*.

2.1.3.3. Emotional intensity ($\alpha = .80$). The impulse strength facet of the Berkeley Expressivity Questionnaire (BEQ-Strength) is a 6-item subscale measuring emotional impulse strength (Gross & John, 1995; $\alpha = .73$ –.78). The scale asks participants to rate agreement or disagreement to personal statements (e.g., "I experience my emotions very strongly") on a 1–7 Likert scale ranging from (1) *strongly disagree* to (7) *strongly agree*.

2.1.3.4. Emotional stability ($\alpha = .76$). The emotional stability factor of the Big Five Minimarkers (Saucier, 1994; $\alpha = .78$) is an 8-item subscale assessing the big five personality traits in which participants rate how well each word (traits such as energetic, moody, organized) describes themselves. Words are rated on a 1 to 9 Likert-type scale from (1) *extremely inaccurate* to (9) *extremely accurate*.

2.2. Results and discussion

Linear regression was used to assess whether self-control predicted the expected affective variables. Consistent with our hypothesis, higher trait self-control was associated with fewer emotional fluctuations, lower levels of emotional intensity, and greater emotional stability (see Table 1). Thus, a linear regression of self-control on emotional lability revealed that self-control level predicted a reduced frequency of mood changes. A second linear regression indicated that higher self-control also was significantly related to decreased emotional intensity.

Thus, higher self-control was associated with significantly fewer mood fluctuations, less emotional intensity, and greater emotional stability. Taken together, this evidence suggests that self-control may dampen the internal experience of emotion. However, a limitation of this study was a lack of emotion manipulation to test whether experienced emotion differed among those high or low in self-control rather than differing only according to dispositional self-report. Therefore, Study 2 was designed to induce positive and negative affect using an emotion manipulation.

Table 1
Study 1: linear regression of self-control predicts emotional fluctuations, intensity, & stability.

Measure	<i>b</i>	SE	β	<i>F</i>	<i>p</i> -Value
Fluctuations (ALS)	−0.58	0.12	−0.50	22.55	<.01
Intensity (BEQ-Strength)	−0.64	0.31	−0.24	4.28	.04
Stability	1.12	0.28	0.45	16.77	<.01

Note: All *df* were *F*(1,68).

3. Study 2: self-control, mood inductions, and continuous emotion ratings

To address shortfalls of previous research, Study 2 induced emotional responses using an emotionally evocative film clip. In order to extend and replicate the findings of Study 1 beyond the limitations of questionnaire data alone, Study 2 measured emotional responses to the manipulation. As film clips have been shown to effectively induce a variety of emotions (Gross & Levenson, 1995; Phillipot, 1993; Rottenberg, Ray, & Gross, 2007), mood was induced using a short (5-min) clip from the animated movie, "Up." Emotional change was assessed (state fluctuations and intensity) using a computerized sliding-scale (Ruef & Levenson, 2007) to obtain continuous emotion ratings in response to the emotionally evocative film clip. Trait self-control, affective lability, affective intensity, and emotional intensity were assessed using self-report questionnaires.

3.1. Method

3.1.1. Participants

One-hundred and twenty participants (68 women) ranged from 18 to 26 years of age (median of 18). Participants identified as Caucasian (55.0%), Asian (10.1%), African American (14.0%), Hispanic (14.7%), and other (6.7%).

3.1.2. Procedure

Recruitment procedures and questionnaire administration procedures were similar to Study 1. In addition to self-report questionnaires, emotion was manipulated using an emotionally evocative video clip while after a neutral baseline mood was induced. Participants simultaneously completed online continuous emotion-ratings.

The clip from "Up" was selected because it evoked a variety of emotions in a piloted sample. Prior to selecting this video clip, naïve research assistants rated maximum and minimum emotional extremes for all video clips under consideration. The clip begins with the humorous introduction of the main character's childhood best friend, and later wife, followed by a flashback of their life together, and ends with a sad scene with death of his elderly wife. The clip concludes with an excerpt from the end of the film while the old man is looking back at their life in a photo album and crying over the loss of his wife. This clip elicited a wide range of positive and negative emotional ratings, inducing both extremes on the positive/negative affect scale.

To ensure that the baseline emotional states were similar across participants directly prior to watching the video clip, participants were instructed to clear their minds of all thoughts, memories, and feelings while focusing on the blank screen (Mauss, Levenson, McCarter, Wilhelm, & Gross, 2005). Participants stared at a blank screen except for an X displayed in the center of the screen for 2 min while classical music played through headphones worn by the participant, followed by 1 min of silence.

3.1.3. Measures

As in Study 1, self-report questionnaires showed adequate reliability (SCS; $\alpha = .87$, ALS; $\alpha = .91$, BEQ-Strength; $\alpha = .84$).

3.1.3.1. Emotional intensity ($\alpha = .87$). The Affective Intensity Measure (Larsen, 1984; $\alpha = .90$ –.94 as reported in Larsen et al., 1986) measures emotional intensity by having participants rate the accuracy of statements such as, "when I accomplish something difficult, I feel euphoric or elated" from (1) *never* to (6) *always*. We modified instructions and the anchors to more accurately address research question of emotional intensity.

3.1.3.2. Continuous emotion rating. The Affect Dial-General Emotion (Levenson & Gottman, 1983; film ratings, Rottenberg et al., 2007) measures continuous emotion fluctuations, which can be used to calculate general emotional intensity and variability. Instead of a physical dial, a computer-based variant of this method was used in which a digital sliding scroll bar was presented concurrently on screen with the emotionally evocative film clip (Ruef & Levenson, 2007). Participants continuously rated the intensity of their emotional reactions by indicating the amount of either positive or negative emotions, adjusting the sliding scale on a continuum of emotional intensity from (−4) *very negative* to (0) *neutral* to (+4) *very positive*. Positive and negative affect were defined in layman's terms to ensure that participants had a good understanding of what emotions constituted positive and negative. Fluctuations were defined as the number of directional changes between positive and negative affect, while intensity was defined as the largest absolute magnitude of positive/negative affect for each participant.

Individuals' mood fluctuation levels were assessed across all recorded scores for the 5-min movie period. The Media Lab v2008 Online Assessment default (Empirisoft, 2008) was used to record at a frequency 10 times per second and averaged those to comprise one rating (e.g., $t = 1$ to $t = 306$).

3.2. Results and discussion

Linear regression was used to evaluate the main hypotheses. The emotional variables of ALS, BEQ-Strength, and AIM-Modified were regressed on self-control (see Table 2). As predicted, high self-control was related to fewer trait level mood fluctuations and less intensity. Contrary to expectations, state-level emotional fluctuations measured by the online movie ratings were not significantly related to self-control using the positive/negative affect scale, $F(1, 118) = 0.77, p = .38$.

Linear regression of self-control on each of the intensity variables showed similar patterns of influence to Study 1, with both measures showing a significant decrease in intensity with higher levels of self-control (see Table 2). As in the previous study, self-control predicted reduced emotional intensity of impulse strength as measured by the BEQ-Strength. Also, in support of the hypothesis, more self-control significantly predicted reduced trait-level emotional intensity, as measured by the modified version of the AIM. In contrast to expectations, the state-level measure of emotional intensity using the positive/negative affect dial was not significant, $F(1, 118) = 0.92, p = .34$.

4. General discussion

High self-control was associated with greater emotional stability, fewer trait-level emotional fluctuations and less intensity in two studies, supporting the hypothesis that high levels of trait self-control may dampen variability of emotional experience. However, in response to video clips at the state-level, our hypotheses were not well supported, yielding mixed results as to whether emotion was restricted. State-level intensity did not show the expected patterns, left seemingly unaffected by self-control, therefore results should be interpreted with caution.

Table 2
Study 2: linear regression of self-control predicts emotional fluctuations & intensity.

Measure	<i>b</i>	SE	β	<i>F</i>	<i>p</i> -Value
Fluctuations (ALS)	−0.29	0.05	−0.50	38.71	.01
Intensity (BEQ-Strength)	−0.02	0.01	−0.19	4.47	.04
Intensity (AIM-Modified)	−0.37	0.17	−0.20	4.89	.03

Note: All *df* were $F(1, 118)$.

4.1. Implications

We found that trait level self-control predicted trait-level fluctuations, using multiple measures across two studies. The evidence presented suggests that the hypothesized relationships have enough support to merit further examination of these relationships in future studies. There is some evidence that overgeneralization of emotional control may occur for those high in trait self-control.

These findings suggest that individuals' emotional experiences may depend on their level of trait self-control. Directly measuring the experience of emotion may seem methodologically implausible; however, it seems reasonable to use self-reported emotional fluctuations and intensity as proxies to describe this experience (Mauss et al., 2005), at least in part. If intensity represents one's emotional experience, and the intensity of the reaction to emotional stimuli is higher in those with low self-control, this could impede subsequent self-control efforts. Conversely, less intensity in those higher in self-control could facilitate self-control efforts, thereby magnifying the effect of trait self-control on emotion.

Additionally, the reduced emotional experience associated with higher self-control may have some negative consequences. First, a lack of variation in emotion may limit the enjoyment of positive events because the contrasting experience of negative affect can make the experience of positive events sweeter (Tversky & Griffin, 1991). In support of the value of experiencing both positive and negative affect, those who are unable to experience intense positive or negative events are generally less happy with their lives than those who fluctuate (stable versus labile; Brebner, 1998). Second, individuals could down-regulate positive affect at a time when expressing positive affect was acceptable and miss experiencing this high. These individuals might also down-regulate sadness for example, when a loved one passes away, and miss the experience of grieving by regulating emotion unnecessarily. Third, and even more importantly, a diminished experience of emotion, whether due to conscious overregulation or unconscious dampening of emotional experience, could have the unintended consequence of limiting one's functionality. Negative emotions may be a driving force behind goal-directed behavior, motivation, and even accurate cognition. Thus, the experience of the full range, including both positive and negative emotions, may have an adaptive advantage that highly self-controlled individuals miss out on. Despite the generally lauded ability to limit emotional extremes, it may be functionally problematic to regulate emotional experience too much because emotional experience can provide important cues for individuals to act on (e.g., Lane, 2000; Larson & Brown, 2007). Future researchers may wish to examine whether individuals high in self-control exhibit deficits in functioning due to decreased emotional experience. Furthermore, future studies could manipulate state self-control and compare those given instruction to regulate emotion versus no instruction (e.g., toward a funny video clip) which would help determine whether emotion regulation is induced unnecessarily by those high in trait self-control, identifying a possible interaction between individual differences in self-control and situationally induced self-regulation.

4.2. Limitations & alternative explanations

Because trait-level measures of emotion were consistently in line with hypotheses whereas state-level measures were inconclusive, it is also possible that trait-level and state-level constructs may interact differently with self-control. This seems unlikely, however, because constructs are designed to be representative over both state and trait levels. A more likely explanation is that trait-level variables predict actions aggregated over time much more accurately than single-episodes of behavior (regarding emotional consistency and stability; Diener & Larsen,

1984). Episodes of behavior (state-level reactions) are much more susceptible to influence by unintended contamination by extraneous variables (the impact of situational variables; e.g., Mischel, 1968) than are trait-level characteristics which, while also variable, are much more consistent than individual instances of behavior. This leads us to believe that self-control affects both intensity and fluctuations based on the confirmed trait-level effects, despite less conclusive results at the state-level.

The trait-level measures of both fluctuations and intensity continue to provide support for the hypotheses that self-control is predictive of fewer fluctuations and less affective intensity. Given the replication of significant trait-level findings in the hypothesized directions, the absence of state-level effects was surprising. The lack of findings for both fluctuations and intensity using the online movie ratings may have been an artifact of artificially reduced variability in emotional extremes. First, oversimplification of reporting emotion may have obscured the effect. The intensity for most participants was close to the maximum (mode of 4.00, $M = 3.47$, and $SD = 0.75$ on a 0–4 scale), which may have similarly limited the ability to identify an effect due to lack of variation. Second, it is possible that there were limited emotions elicited by the target video. In particular, its short duration (5 min), allowed time for few major plot shifts between positive affect and negative affect, thereby limiting the potential amount of fluctuations experienced. Third, self-report measures may not be an adequate representation of internal emotional experience, even with real-time ratings. Thus, future studies on self-control and emotion might use behavioral and/or physiological responses (e.g., video-recording and coding participants' facial expressions; heart rate or galvanic skin responses; and/or neuroimaging techniques) to improve upon and supplement self-report indices of emotional experience.

4.3. Conclusions

There is some evidence that overgeneralization of emotional control may occur for those high in trait self-control. Individual differences in self-control levels predicted trait-level fluctuations in emotional experience, across multiple studies and using multiple measures. Future research is warranted to further substantiate and clarify the effect of self-control on emotion, and to examine similarities and differences between these at trait versus state levels.

Understanding the basis of individual differences in emotional regulation may refine our understanding of the role self-control can play in everyday life. Particularly in more extreme cases, lack of emotional control and emotional dysregulation can have disastrous results on interpersonal relationships (e.g., arguments, social interactions), sometimes even escalating to physical problems (e.g., spousal abuse, depression). A better understanding of emotional regulation may allow researchers and clinicians to train at-risk populations to better control their emotions and prevent such outcomes, or conversely to allow those with a less rich emotional experience to reduce self-control tendencies in order to preserve their full spectrum of emotions.

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