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Mapping Global Self-Reports to Daily Processes

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Abstract

Recent theory conceptualizes emotion regulation as occurring across three stages: (i) identifying the need to regulate, (ii) selecting a strategy, and (iii) implementing that strategy to modify emotions. Yet, measurement of emotion regulation has not kept pace with these theoretical advances. In particular, widely-used global self-report questionnaires are often assumed to index people's typical strategy selection tendencies. However, it is unclear how well global self-reports capture individual differences in strategy selection and/or whether they may also index other emotion regulation stages. To address this issue, we examined how global self-report measures correspond with the three stages of emotion regulation as modelled using daily life data. We analyzed data from nine daily diary and experience sampling studies (total $N = 1{,}097$), in which participants provided daily and global self-reports of cognitive reappraisal, expressive suppression, and rumination. Indexing strategy selection, we found only weak-to-moderate correlations between global self-reports and average daily self-reports of each regulation strategy. Global self-reports also correlated with individual differences in the degree to which (a) preceding affect experience predicted regulation strategies (representing the identification stage), and (b) regulation strategies predicted subsequent changes in affective experience (representing the implementation stage). Our findings suggest that global self-report measures of reappraisal, suppression, and rumination may not strongly and uniquely correlate with individual differences in daily selection of these strategies. Moreover, global self-report measures may also index individual differences in the perceived need to regulate, and the affective consequences of regulation in daily life.

A growing literature on emotion regulation has documented how people seek to influence their emotions. Early work focused on developing taxonomies of emotion-regulation strategies (e.g., Gross, 1998; Koole, 2009; Parkinson & Totterdell, 1999) and understanding each strategy's distinct consequences (e.g., Aldao et al., 2010; Webb et al., 2012a). Building from this work, recent theory has conceptualized emotion regulation as a multi-stage process, involving identification of a need to regulate, selection of regulation strategies, and implementation of selected strategies (e.g., Gross, 2015; Webb et al., 2012b). Yet, measurement of emotion regulation has not entirely kept pace with these theoretical advances. Global self-report measures are routinely assumed to assess the extent to which people typically select specific regulation strategies (John & Eng, 2014). However, it remains unclear how well global self-report measures index everyday strategy selection, and whether they may also index other regulation stages.[1]

Research using daily diary (e.g., Nezlek & Kuppens, 2008) and experience sampling methods (ESM; e.g., Brans et al., 2013) provides a means to capture the multi-stage processes theorized to underpin emotion regulation (Colombo et al., 2020). Thus, to determine how global self-reports align with theorized dynamics of emotion regulation, we need studies combining daily life methods and global questionnaires. To this end, we analyzed data from nine diary and ESM studies to investigate how global self-reports correspond with the identification, selection, and implementation of three frequently studied regulation strategies: (i) *cognitive reappraisal*, which involves reframing situations to alter their emotional impact; (ii) *expressive suppression*, the inhibition of emotionally expressive behavior; and (iii) *rumination,* a cognitive strategy involving passive engagement with emotions.[2]

[1] There is also a substantial literature on experimentally instructed emotion regulation (e.g., Morawetz et al., 2017; Webb et al., 2012a). For discussion of how the stages of emotion regulation can be operationalized in experimental paradigms, see Sheppes (2020). Our focus, in the current paper, is on understanding the processes involved in spontaneous (i.e., *uninstructed*) emotion regulation in daily life.

[2] Consistent with most research on rumination, we focused on the maladaptive *brooding* component of rumination (Treynor et al., 2003; see also Trapnell & Campbell, 1999).

Emotion Regulation as a Multi-Stage Process

Recent theoretical accounts of emotion regulation emphasize its dynamic, iterative, and cyclical nature, including bidirectional links with emotions (e.g., Gross, 2015; Tamir, 2021; Webb et al., 2012b). In particular, Gross's (2015) extended process model proposes three sequential stages: (i) an *identification* stage, during which people appraise their current emotions as "good" or "bad" for them and activate a goal to regulate; (ii) a *selection* stage, during which people choose which regulation strategies to use; and (iii) an *implementation* stage, involving the deployment of selected strategies to influence emotions.

A major implication of the extended process model, and other recent theoretical work (e.g., Sheppes, 2020; Tamir, 2021), is that to understand emotion regulation requires us to move beyond a singular focus on *which* strategies people select, to consider *when* (e.g., Haines et al., 2016) and *how effectively* (e.g., Ford et al., 2017) people deploy their chosen regulation strategies. However, only a handful of empirical studies have attempted to operationalize emotion regulation as a dynamic multi-stage process, incorporating both the antecedents and consequences of regulation (e.g., Lennarz et al., 2019; Livingstone & Isaacowitz, 2019; Pavani et al., 2017).

Global Self-Reports of Emotion Regulation

The dominant approach to studying emotion regulation relies on global (or "trait") questionnaires (for reviews, see John & Eng, 2014; Naragon-Gainey et al., 2017). These measures ask respondents how much they habitually or typically use regulation strategies in their daily lives (e.g., De France & Hollenstein, 2017; Garnefski et al., 2001; Gratz & Roemer, 2004; Gross & John, 2003; Nolen-Hoeksema & Morrow, 1991). Such global self-reports are commonly assumed to measure individual differences in people's habitual selection of emotion-regulation strategies (John & Eng, 2014; McMahon & Naragon-Gainey, 2020). For example, in their meta-analysis of associations between global self-reported emotion regulation and psychopathology, Aldao et al. (2010) argue that "self-report scales typically measure dispositional tendencies toward certain emotion-regulation strategies, and thus supposedly assess what participants do across time and different contexts" (p. 219). Yet, as Naragon-Gainey et al. (2017) point out, it remains unclear how well such global measures map onto how people identify, select, and implement regulation strategies in daily life. In line with this, we argue that although global self-report measures are inherently static—being taken at one time point—they may nevertheless index dynamic aspects of daily emotion regulation, such as temporal associations between regulation strategies and affective experience. Testing this claim requires methods capable of capturing dynamic aspects of emotion regulation.

Daily Self-Reports of Emotion Regulation

Daily life methods provide a window into the dynamic process of emotion regulation by obtaining intensive, repeated momentary self-reports in everyday life (e.g., Colombo et al., 2020). As such, researchers are increasingly using daily life methods to study emotion regulation (e.g., Blanke et al., 2019; Brans et al., 2013; Heiy & Cheavens, 2014; Medland et al., 2020; Nezlek & Kuppens, 2008; Troy et al., 2019). Because daily life methods involve repeated assessment of people's momentary/recent use of regulation strategies, they can be used to index *state* and *trait* strategy selection. Specifically, daily life measures can be decomposed into within-person variance (reflecting state strategy selection) and between-person variance (reflecting trait strategy selection; Hamaker et al., 2007; Hamaker et al., 2017). Findings to date have revealed that strategy selection in daily life varies considerably both within and between individuals.

Yet, daily life methods can also be used to assess other stages of the regulation process beyond strategy selection. Specifically, daily self-reports can be used to model within-person *contingencies* of state emotion-regulation strategy use and other states, such as affect. This offers an opportunity to model processes occurring in the identification and implementation stages of emotion regulation (Gross, 2015). In the first stage, identifying a need to regulate relies, in part, on a representation of current affect (Gross et al., 2019). Thus, one way to operationalize identification is to assess the degree to which state strategy selection is predicted by preceding affect intensity. In contrast, the implementation stage is where regulation processes reach their target, as strategies influence how emotions unfold over time (Gross et al., 2019). Thus, the extent to which state strategy selection predicts change in subsequent affective experience is one way to operationalize the implementation stage. As outlined in Table 1, in the current study we applied these operationalizations of the three regulation stages proposed in Gross's (2015) extended process model to daily life data.

Although preliminary and imperfect, these operationalizations of emotion regulation stages can be used to inform understanding of existing global measures of emotion regulation. Specifically, in the present research we investigated how global self-reports correlate with individual differences in the identification, selection, and implementation stages of emotion regulation, operationalized using daily self-reports of emotion regulation and affect. Table 1 also explains different possible patterns of association between global scores and our proposed operationalization of each emotion-regulation stage.

Correspondence Between Global and Daily Self-Reports of Emotion Regulation

In the following paragraphs, we outline research and theory relevant to the correspondence between global-self reports and each of the three stages of emotion regulation in daily life. We begin by discussing how global self-reports correspond with daily strategy selection. We begin here because researchers have commonly (albeit implicitly) assumed that global self-report scales assess trait strategy selection, that is, *which* emotion regulation strategies people habitually select. Next, we turn our attention to correspondence between global self-reports and identification and implementation processes in daily life.

Table 1

Operationalization of Emotion Regulation Stages using Daily Self-Reports and Possible Associations with Global Self-Reports

Emotion Regulation Stage	Operationalization using daily self-reports	Interpretation	Interpretation of association with global self-reports
Identification	$Affect_{t-1} \rightarrow ER_t$ Latent slope of affect at occasion *t* – 1 predicting ER strategy use at occasion *t*	**negative slope:** increases in affect predict decreases in daily use of ER strategy **positive slope:** increases in affect predict increases in daily use of ER strategy	**negative correlation:** higher global scores associated with more – (or less +) slope **positive correlation**: higher global scores associated with more + (or less –) slope
Selection	$\frac{\sum_{t=0}^{n} ER_t}{t}$ Latent mean (intercept) of ER strategy across all measurement occasions *t*	**Higher values:** greater tendency to select ER strategy in daily life	**negative correlation:** higher global scores associated with lower daily ER strategy selection **positive correlation**: higher global scores associated with higher daily ER strategy selection
Implementation	$ER_{t-1} \rightarrow Affect_t$ Latent slope of ER strategy at occasion *t* – 1 predicting affect at occasion *t*	**negative slope:** increases in daily ER strategy use predict decreases in affect **positive slope:** increases in daily ER strategy use predict increases in affect	**negative correlation:** higher global scores associated with more – (or less +) slope **positive correlation**: higher global scores associated with more + (or less –) slope

Note. ER = emotion-regulation strategy

That is, we explore the possibility that, despite targeting strategy selection, global self-reports may also index *when* people use certain strategies (identification), and *how* using those strategies influences subsequent affect (implementation). Together, these tests of global-daily self-report correspondence aim to yield greater insight into which stages of emotion regulation are assessed in common global measures.

Selection Correspondence

Previous research in this area has been limited to examining how global self-report scales correlate with between-person variance in daily self-reports of emotion-regulation strategy selection (e.g., Brockman et al., 2017; McMahon & Naragon-Gainey, 2020; Schwartz et al., 1999). We refer to this correlation between global and daily self-reports of strategy selection as *selection correspondence*. Two existing theoretical frameworks suggest distinct predictions about the likely strength of selection correspondence.

According to whole trait theory (Fleeson & Jayawickreme, 2015), traits can be defined as density distributions of states, such that the mean of repeatedly sampled states represents a person's typical standing along a trait dimension. Since global self-reports also capture people's perceived typical trait level, they should correlate relatively strongly with mean daily self-reports. Supporting this prediction, Fleeson and Gallagher (2009) found that mean state self-reports of the Big Five personality dimensions correlated at r = .40 to .60 with global self-reports of the same dimensions (see also Augustine & Larsen, 2012; Finnigan & Vazire, 2018). If emotion regulation fits within whole trait theory, we would expect to find relatively strong selection correspondence, in line with how global self-reports of emotion-regulation strategies have been interpreted to date. However, as whole trait theory was developed to explain broad personality dimensions it may be less applicable to narrower constructs, such as emotion-regulation strategies.

As an alternative view, Robinson and Clore's (2002) accessibility model of emotional self-report proposes that people draw on different knowledge when reporting global versus momentary feelings. Momentary reports are a direct read-out of experiential knowledge, which is highly contextualized, embodied, and decays rapidly in episodic memory. In contrast, because feelings are context-dependent and fleeting, people rely on abstract semantic knowledge about the self when providing global self-reports of how they typically feel (Robinson & Clore, 2002; see also Conner & Barrett, 2012). Thus, the accessibility model predicts weak or no correspondence between global and momentary measures of feelings. Given that daily emotion regulation are also dynamic, fluctuating in response to affect (e.g., Feldman & Freitas, 2021; Pavani et al., 2017), goals (e.g., English et al., 2017; Kalokerinos et al., 2017), and other situational factors (e.g., Sheppes et al., 2014; Young & Suri, 2020), global and momentary reports of emotion regulation-strategies may similarly derive from different sources of information. From this perspective, we would predict weak selection correspondence. Yet, unlike feelings, emotion-regulation strategies involve deliberate behavioral or cognitive efforts and may thus be easier to encode as discrete "events" for later retrieval. If this were the case, Robinson and Clore's (2002) model may be less applicable to emotion-regulation strategies.

Previous studies provide mixed evidence regarding the strength of selection correspondence, with some studies finding no reliable convergence between daily and global ratings of emotion-regulation strategy selection (e.g., Brockman et al., 2017; Schwartz et al., 1999), and others reporting reliable, yet relatively weak, correspondence (*r*s $\leq$ .35; e.g., Ford et al., 2017; Kircanski et al., 2015; Pasyugina et al., 2015; Peters et al., 2020). A recent study by McMahon and Naragon-Gainey (2020), which examined correlations among global and daily self-reports of 10 emotion-regulation strategies in two daily diary studies, represents the most comprehensive test of selection correspondence to date. Despite assessing daily regulation strategy selection in a highly relevant context (i.e., intense emotional episodes), McMahon and Naragon-Gainey found mixed support for strategy-specific selection correspondence (*r*s = -.03 to .64). Further, global self-reports of each emotion-regulation strategy tended to correlate as strongly with daily reports of *other* strategies as with daily reports of the same strategy, suggesting that global measures show low discriminant validity.

Taken together, previous research provides mixed evidence regarding how well global self-report measures capture people's typical selection of emotion-regulation strategies in daily life. In the present research, we sought to provide a robust test of selection correspondence for three widely studied regulation strategies (reappraisal, suppression, and rumination) across nine diary and ESM studies, more than quadrupling the sample size of previous investigations of selection correspondence (McMahon & Naragon-Gainey, 2020).

Identification Correspondence

The current study goes beyond previous tests by examining how global self-reports correlate with two dynamic aspects of daily emotion regulation. First, emotion regulation occurs when people evaluate their current emotion as requiring adjustment and thus should vary as a function of affective experience. Accordingly, we examine how global self-reports correlate with the within-person contingency between daily strategy use and preceding affective experience, which we propose as a measure of *identification correspondence*.

Previous studies have demonstrated that daily use of emotion-regulation strategies is contingent on recent affective experience (Brans et al., 2013) and that such dynamics vary as a function of personality (Pavani et al., 2017). However, to our knowledge, the current research is the first to investigate how individual differences in identification (operationalized as the contingency between state emotion regulation and preceding affect) correlate with global self-reports.

We reasoned that identification correspondence may emerge because many global self-report emotion regulation questionnaires bake affective input into their items or scale instructions. For instance, the Ruminative Responses Scale (RRS; Nolen-Hoeksema & Morrow, 1991) instructs participants to indicate how much they engage in rumination when feeling “down, sad, or depressed”. Similarly, several items in the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) explicitly invoke emotional antecedents (e.g., “When I am feeling negative emotions…”) of strategy selection.

Two recent studies are consistent with this claim that global emotion regulation scales may index the identification of a need to use regulation strategies. Tamir et al. (2019) recently demonstrated that the ERQ reappraisal subscale partly measures pro-hedonic emotion goals (i.e., wanting to decrease negative affect or increase positive affect), which become activated during the identification stage (Gross, 2015). Similarly, self-reported habitual expressive suppression (assessed with the ERQ) has been found to correlate more strongly with suppression in daily life in the context of more (vs. less) intense negative emotions (Peters et al., 2020). This suggests that global self-report measures, such as the ERQ, may capture the tendency to use regulation strategies specifically when there is a greater need to regulate, rather than across all contexts (Peters et al., 2020).

Implementation Correspondence

Second, the key goal of emotion regulation is to influence the trajectory of emotions (Gross, 2015), which occurs during the final implementation stage. Thus, we also examine how global self-reports relate to the within-person contingency between daily strategy use and subsequent affect, which we label *implementation correspondence*.

Previous research shows that daily use of emotion-regulation strategies reliably impacts subsequent affective experience (e.g., Brans et al., 2013) and that these implementation effects differ substantially between individuals (e.g., Pavani et al., 2017; Pe et al., 2013; Troy et al., 2019). Although we are not aware of any studies investigating whether individual differences in strategy implementation correlate with global self-reports of emotion regulation, there are theoretical reasons to suppose such implementation correspondence may occur. Specifically, theories of personality dynamics suggest that associative learning processes may increase people's tendency to engage in behaviours that are rewarding when implemented (Wrzus & Roberts, 2017). That is, people may be more likely to use a regulation strategy if implementing that strategy results in desired emotional change. Alternatively, people may simply be more likely to remember using a regulation strategy to the extent that it has any (desired or undesired) affective consequences (Kensinger, 2009).

In line with this reasoning, Ford et al. (2017) found that global self-reports of cognitive reappraisal correlated equally strongly with a daily measure of perceived reappraisal success (r = .23) as with mean daily use of reappraisal (r = .18), suggesting that global self-report measures of reappraisal may not only index habitual selection of this strategy, but also how effectively it is implemented. Other studies have similarly found that global self-reports of reappraisal are associated with reappraisal effectiveness (e.g., Kanske et al., 2015; McRae et al., 2012b), suggesting that global self-reports of emotion regulation may index individual differences in strategy implementation, as well as selection.

The Present Research

Our aim was to investigate how global self-reports of emotion regulation map onto the identification, selection, and implementation of regulation strategies in daily life (Gross, 2015). Given the prevalence of global self-report scales, this mapping is critical to theoretically situating and interpreting research on emotion regulation.

To test for selection correspondence, we estimated correlations between global self-reports and individual differences in the between-person (mean) component of daily self-reports of emotion regulation. To test for identification correspondence, we estimated how global self-reports correlated with the degree to which daily emotion regulation is contingent on preceding positive and negative affective experience. Finally, to investigate implementation correspondence, we modelled how global self-reports of emotion regulation corresponded with the impact of daily emotion regulation on subsequent positive and negative affective experience. In each case, we examined correspondence both within and across regulation strategies to provide evidence of convergent and discriminant associations, respectively, among daily and global measures.

Our focus was nine studies in which participants completed global and daily self-reports of reappraisal, suppression, and rumination—three often studied, and distinct, emotion-regulation strategies. Participants completed global questionnaires at baseline, and subsequently completed daily diary or ESM reports of their state use of each strategy 1-10 times per day for 7-21 consecutive days. We report separate analyses per study as well as meta-analyses to summarize evidence across all nine studies.

Method

We analyzed data from nine daily life studies (Total *N*=1,097), including two daily diary studies and seven ESM studies. Three of the ESM studies assessed emotion-regulation strategies in response to emotional or stressful events (labelled "ESM-Event"), whereas the others assessed emotion-regulation strategies across normal daily contexts.[3] Combining data from these nine studies with diverse designs and samples served to maximize statistical power and increase the generalizability of our findings. Below, we report analyses for each study followed by meta-analyses summarizing results across all relevant studies.

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[3] Diary Study 1 also assessed emotion-regulation strategies in response to the most negative event of the day but we group it with the other diary study on methodological grounds.

All studies received appropriate ethical clearance (or were exempt from ethics review) and have been previously analyzed to answer research questions distinct from those addressed in this paper (see Table S1 in the supplemental materials for more information about each study). Below, we report only the measures relevant to the current research.

Participants and Procedure

Participants were undergraduates (6 studies), general community members (2 studies), or Amazon MTurk workers (1 study) recruited in Australia, Belgium, or the US. In all studies, participants completed both global and daily self-report measures of cognitive reappraisal, expressive suppression, and rumination. We followed exclusion criteria applied in previous analyses of each dataset. Further details of participants and procedure for each study are summarized in Table S1 in the supplemental materials.

Materials and Measures

Global Self-Reports of Emotion-Regulation Strategies

Global reappraisal and suppression use were assessed with Gross and John's (2003) ERQ, comprising six reappraisal items (e.g., "When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about"), and four suppression items (e.g., "When I am feeling negative emotions, I make sure not to express them") rated from 1 (*strongly disagree*) to 7 (*strongly agree*).

In all but two studies, global rumination was measured with the *brooding* subscale of the RRS (Treynor et al., 2003), comprising five items (e.g., "Think 'Why do I always react this way?'") rated on a scale from 1 (*almost never*) to 4 (*almost always*). Two studies (diary Study 2, ESM Study 3) assessed global rumination using the rumination subscale of Trapnell and Campbell's (1999) Reflection-Rumination Questionnaire, comprising 12 statements (e.g., "I never ruminate or dwell on myself for very long"; reverse-scored) rated from 1 (*strongly* *disagree*) to 5 (*strongly agree*). Descriptive statistics and reliability estimates for the global emotion regulation scales are reported in Table S4 in the supplemental materials.

Daily Self-Reports of Emotion-Regulation Strategies

As is typical for diary and ESM studies, emotion-regulation strategies were measured with single items in most studies. Specifically, single-item measures were used in six studies to measure reappraisal (e.g., "Have you looked at the cause of your feelings from another perspective?"), in seven studies to assess suppression (e.g., "I was careful not to express my emotions to others"), and in five studies to measure rumination (e.g., "I ruminated or dwelled on the event or my emotions"). The remaining studies included 2- or 3-item measures of daily emotion-regulation strategies (see Table S2 in the supplemental materials). Descriptive statistics (and reliability estimates for multi-item measures) for daily self-report measures of emotion-regulation strategies are reported in Table S5 in the supplemental materials.

Daily Self-Reports of Affect

In all but one study (ESM-Event Study 3), momentary negative affect (NA) and positive affect (PA) were assessed with two or more items including at least one low-arousal (e.g., sad, relaxed) and one high-arousal (e.g., angry, happy) adjective. In ESM-Event Study 3, NA and PA were assessed using single items (see Table S3 in the supplemental materials for complete NA and PA items in all ESM and ESM-Event studies). Multilevel reliability (Cronbach's alpha) for daily NA and PA scales are reported in Table S6 in the supplemental materials. We do not provide details of affect measures in the two diary studies as we only conducted analyses including affect for ESM and ESM-Event studies (see below).

Data Analyses

Power and Sample Size

The current project involved secondary analysis of existing data. Thus, sample sizes for each study were determined according to various theoretical and pragmatic criteria. As such, some individual studies (e.g., ESM Study 3, $N = 46$) are likely underpowered to test our research questions. We therefore conducted meta-analyses (see below) to maximize statistical power and synthesize findings across studies. Given the diversity of methods and measures across studies, we report variance and heterogeneity estimates for our main meta-analyses in the supplemental materials (see Tables S14 to S18). Finally, to ensure that our meta-analyses were sufficiently powered, we ran post-hoc power analyses, which we also report in the supplemental materials (see Table S19).

Multilevel Structural Equation Models (MSEM)

To account for the nested data structure (surveys nested within participants), we analyzed data using multilevel structural equation modeling (MSEM) in Mplus version 8.5 (L.K. Muthén & Muthén, 1998-2017). MSEM uses latent centering to decompose observed multilevel outcomes into latent within-person (state) and between-person (trait) components and allowed us to specify models with both regressions and correlations among multiple outcomes. Due to the inclusion of random slopes for predictors with missing data, using maximum likelihood estimation for our analyses would have required high-dimensional numerical integration, which is computationally intensive and leads to poor model convergence. Thus, we used Bayesian estimation[4] as recommended by Asparouhov and Muthen (2019). Bayesian estimation also allowed us to obtain standardized parameter estimates, which we subsequently meta-analyzed (see below). We report standardized estimates and 95% Bayesian credible intervals (CIs) for all parameters, which we considered as "statistically significant" when their 95% CIs did not include zero.

[4] We used Mplus's default non-informative Bayesian priors ensuring that our results are asymptotically equivalent to those obtained under maximum likelihood (Zyphur & Oswald, 2015). To obtain stable parameter estimates, we specified a minimum of 20,000 Bayesian iterations before checking for model convergence, which was defined as a posterior scale reduction value below 1.05.

Figure 1 illustrates the MSEM fitted to each dataset. The left panel shows the decomposition of observed diary/ESM variables into latent within-person and between-person components. Using data from all nine studies, we tested for selection correspondence by correlating global self-reports with the between-person component (i.e., random intercept) of daily self-reports for each emotion-regulation strategy (see Figure 1, top-right panel).

We modelled identification and implementation slopes using the within-person state components of diary/ESM measures (see Figure 1, bottom-right panel). We only fitted this within-person model to the seven ESM/ESM-Event studies because we reasoned that identification and implementation processes unfold within, but not across, days. This aligns with the finding that most daily emotional episodes have a duration of 1-2 hours (Verduyn et al., 2009). In the two diary studies, it would only been possible to model how emotion-regulation strategy use on a given day predicts affect the next day (or vice versa), which we do not believe appropriately reflects the timescale of identification and implementation dynamics.

Within-person identification slopes were estimated by regressing each emotion-regulation strategy at time t onto affect at $t-1$, while controlling for regulation strategies at $t-1$. Thus, within-person identification slopes represent the extent to which state emotion regulation is contingent upon preceding affect. We tested for identification correspondence by correlating global self-reports of emotion regulation with (random) identification slopes at the between-person level.

Within-person implementation slopes were estimated by regressing affect at time t onto emotion-regulation strategy use "since the last survey" reported at time t, controlling for affect at $t-1$. Within-person implementation slopes therefore represent how the state use of each emotion-regulation strategy is associated with change in affect from $t-1$ to t. We tested for implementation correspondence by correlating global emotion regulation scores with (random) implementation slopes at the between-person level.

All within-person regression paths (including autoregressive effects) were estimated as random slopes. At the between-person level, all random within-person parameters were allowed to freely covary with each other, and with global emotion-regulation scores (see top-right panel in Figure 1). Thus, our main tests of identification, selection, and implementation correspondence were zero-order correlations (i.e., standardized covariances) taken from these models, meaning each set of analyses does not control for the other components. However, we also report supplemental analyses testing for unique relationships among identification, selection, and implementation for each strategy with global reports of the same regulation strategy (described below and in the supplemental materials).

Meta-Analyses

We extracted standardized covariances (i.e., correlations) and regression coefficients from each study (Peterson & Brown, 2005) and synthesized these using random-effects meta-analyses conducted with the *metafor* R-package (Viechtbauer, 2010). Meta-analyses for selection correspondence included estimates from all nine studies, whereas those for identification and implementation correspondence used estimates from the seven ESM/ESM-Event studies. We also report meta-analytic estimates of average identification (Tables S8 and S9) and implementation (Tables S10 and S11) slopes in the supplemental materials. We report variance and heterogeneity estimates for our main meta-analyses (see Tables S14-S18) and post-hoc power for significant meta-analytic effects (see Table S19) in the supplemental materials.

Open Practices

All data and analysis scripts required to reproduce the analyses reported in this paper are available at https://osf.io/q5dz6/.

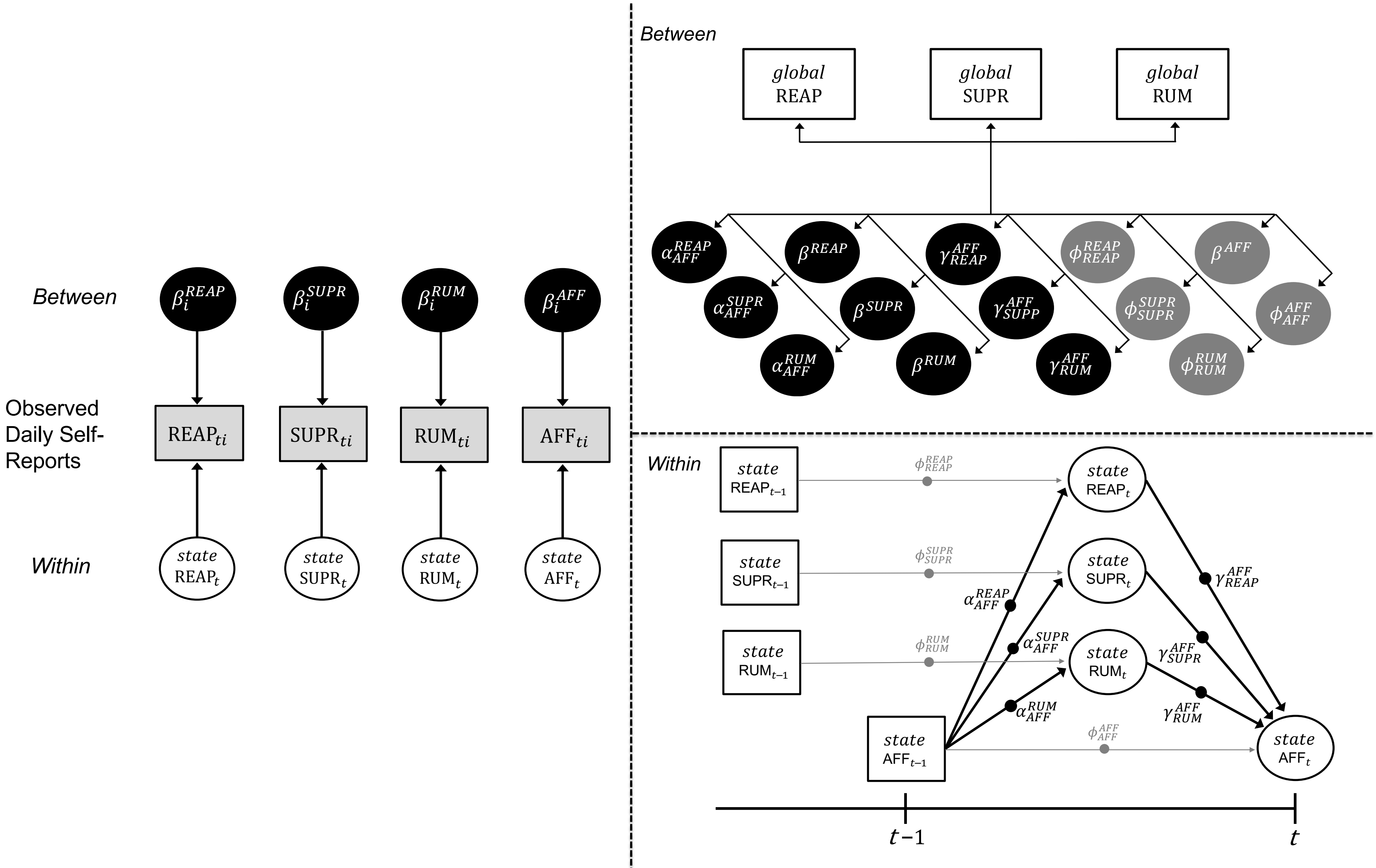

Figure 1. MSEM model diagram. Left panel shows decomposition of observed daily self-reports (grey rectangles) into latent within-person (white ellipses) and between-person (black ellipses) components. Bottom-right panel shows the within-person model: identification slopes (e.g., α_{AFF}^{REAP}) were estimated by regressing each regulation strategy at time *t* (reported as 'since the last survey') onto state affect reported at time *t* – 1, controlling for state regulation strategy use at time *t* – 1; implementation slopes (e.g., γ_{REAP}^{AFF}) were estimated by regressing state affect at time *t* onto state regulation strategies at time *t*, controlling for affect at time *t* – 1; autoregressive slopes (e.g., ϕ_{REAP}^{REAP}) were estimated using observed person-mean centered lagged variables. All within-person intercepts and slopes had random effects. Top-right panel shows the between-person model: all random effects were allowed to covary freely with each other and with observed global self-reports of each emotion-regulation strategy (e.g., $global^{REAP}$).

Results

Selection Correspondence

Table 2 contains correlations among global self-reports and the between-person (trait) component of daily self-reports, representing selection correspondence. Shaded cells contain within-strategy correlations among global and daily self-reports for each emotion-regulation strategy, and unshaded cells contain cross-strategy correlations (e.g., correlations between global reappraisal and daily rumination).

Meta-analyses of results across all nine studies revealed that global self-reports showed reliable positive correlations with the between-person component of daily self-ratings for all three emotion-regulation strategies. Nevertheless, there were substantial differences among strategies, with the strongest selection correspondence for rumination (r_{meta} = .40, 95% CI [.30 to .49]), followed by suppression (r_{meta} = .30, 95% CI [.19 to .42]), and the weakest selection correspondence for reappraisal (r_{meta} = .14, 95% CI [.01 to .28]).

We also found evidence of reliable cross-strategy correlations. Specifically, global rumination correlated with the between-person components of daily reappraisal (r_{meta} = .13, 95% CI [.03 to .24]) and suppression (r_{meta} = .25, 95% CI [.15 to .35]) to a similar degree that global self-reports of reappraisal and suppression correlated with their daily counterparts.

Additional Exploratory Analyses

We ran a series of exploratory analyses testing whether individuals with greater variability in daily self-reports of emotion regulation may be less accurate in their global self-reports. Meta-analyses of these models revealed that selection correspondence was not reliably moderated by within-person variability in daily self-reports for any of the regulation strategies (see Table S7 in the supplemental materials).

Table 2

Correlations Among Global Self-Reports and the Trait-Component of Daily Self-Reports Representing Selection Correspondence

	Between-Person Component of Daily Self-Reports					
	Reappraisal (β_i^{REAP})		Suppression (β_i^{SUPR})		Rumination (β_i^{RUM})	
Global Self-Reports	*r*	95% CI	*r*	95% CI	*r*	95% CI
Reappraisal						
Diary Study 1 (*N* = 114)	**.34**	**.15 to .55**	.08	-.15 to .30	**-.31**	**-.50 to -.10**
Diary Study 2 (*N* = 153)	**.38**	**.23 to .52**	-.01	-.18 to .16	-.02	-.19 to .15
ESM Study 1 (*N* = 176)	**.20**	**.04 to .36**	.06	-.11 to .22	.06	-.11 to .22
ESM Study 2 (*N* = 200)	.06	-.09 to .21	-.02	-.17 to .13	.07	-.09 to .22
ESM Study 3 (*N* = 46)	.10	-.46 to .64	-.01	-.57 to .53	.05	-.50 to .60
ESM Study 4 (*N* = 95)	.08	-.17 to .34	-.13	-.37 to .12	-.07	-.32 to .19
ESM-Event Study 1 (*N* = 101)	-.22	-.44 to .02	-.17	-.40 to .07	-.17	-.40 to .06
ESM-Event Study 2 (*N* = 100)	-.05	-.29 to .20	.01	-.24 to .25	-.11	-.34 to .14
ESM-Event Study 3 (*N* = 112)	**.32**	**.11 to .51**	.12	-.10 to .34	.19	-.03 to .40
Meta-Analysis[a] (*N* = 1097)	**.14**	**.01 to .28**	-.01	-.06 to .06	-.03	-.13 to .07
Suppression						
Diary Study 1 (*N* = 114)	-.20	-.40 to .03	**.24**	**.03 to .45**	.06	-.15 to .28
Diary Study 2 (*N* = 153)	.03	-.14 to .19	**.56**	**.45 to .68**	**.21**	**.04 to .36**
ESM Study 1 (*N* = 176)	**.17**	**.01 to .33**	**.45**	**.31 to .57**	**.37**	**.22 to .51**
ESM Study 2 (*N* = 200)	.01	-.14 to .17	**.18**	**.02 to .32**	.07	-.09 to .22
ESM Study 3 (*N* = 46)	.03	-.55 to .56	.21	-.37 to .70	.08	-.48 to .61
ESM Study 4 (*N* = 95)	-.06	-.30 to .20	**.26**	**.01 to .48**	.01	-.23 to .27
ESM-Event Study 1 (*N* = 101)	.00	-.23 to .25	.13	-.11 to .36	-.02	-.26 to .22
ESM-Event Study 2 (*N* = 100)	.12	-.14 to .34	**.28**	**.04 to .49**	.23	-.01 to .45
ESM-Event Study 3 (*N* = 112)	-.12	-.34 to .10	**.22**	**.01 to .43**	.03	-.19 to .25
Meta-Analysis[a] (*N* = 1097)	.00	-.08 to .08	**.30**	**.19 to .42**	**.13**	**.03 to .22**
Rumination						
Diary Study 1 (*N* = 114)	-.13	-.34 to .09	-.05	-.26 to .18	**.43**	**.24 to .60**
Diary Study 2 (*N* = 153)	.14	-.03 to .30	**.36**	**.20 to .50**	**.56**	**.44 to .67**
ESM Study 1 (*N* = 176)	**.26**	**.11 to .41**	**.43**	**.30 to .57**	**.46**	**.32 to .58**
ESM Study 2 (*N* = 200)	**.26**	**.12 to .40**	**.26**	**.12 to .40**	**.45**	**.32 to .57**
ESM Study 3 (*N* = 46)	-.21	-.69 to .38	.03	-.53 to .59	.11	-.46 to .63
ESM Study 4 (*N* = 95)	.10	-.15 to .34	**.26**	**.02 to .49**	**.31**	**.07 to .53**
ESM-Event Study 1 (*N* = 101)	.22	-.01 to .45	**.29**	**.06 to .50**	**.26**	**.02 to .47**
ESM-Event Study 2 (*N* = 100)	**.25**	**.01 to .46**	**.27**	**.04 to .50**	**.34**	**.11 to .54**
ESM-Event Study 3 (*N* = 112)	.13	-.09 to .34	.21	-.01 to .42	**.24**	**.02 to .44**
Meta-Analysis[a] (*N* = 1097)	**.13**	**.03 to .24**	**.25**	**.15 to .35**	**.40**	**.30 to .49**

Note. Shaded cells contain within-strategy correlations representing selection correspondence for each emotion-regulation strategy; Estimates in bold have 95% CIs that do not include zero.
[a] Meta-analyses based on Fisher *z*-transformed correlations with frequentist 95% CIs.

Identification Correspondence

Tables 3 and 4 contain within-strategy (shaded) and cross-strategy (unshaded) correlations between global self-reports and within-person NA and PA identification slopes, respectively. As explained in Table 1, positive correlations would indicate that individuals with higher global self-reports tend to have more positive (or less negative) identification slopes (i.e., they have a greater tendency to use a strategy following increases in PA or NA). Before reporting our meta-analytic findings for identification correspondence, we first briefly summarize average identification slopes for each strategy to aid in the interpretation of our key findings.

Average Identification Slopes

Meta-analyses of the average identification slopes revealed that NA predicted increases in state rumination whereas PA predicted decreases in state rumination. In contrast, neither state reappraisal nor suppression were consistently predicted by preceding NA or PA (see Tables S8 and S9 in the supplemental materials).

NA Identification Correspondence

In terms of within-strategy correlations, meta-analyses revealed that there was reliable NA identification correspondence for rumination (r_{meta} = –.09, 95% CI [–.16 to –.02]), but not for reappraisal or suppression. This finding indicates that although the average NA identification slope for rumination was positive (see Table S8), this slope was weaker among individuals with higher global rumination self-reports. This suggests that for those higher in global rumination, their use of rumination was less contingent on NA. We also found evidence of reliable cross-strategy NA identification correspondence. Specifically, global rumination scores correlated negatively with NA identification slopes for state reappraisal (r_{meta} = –.19, 95% CI [–.29 to –.10]) and state suppression (r_{meta} = –.08, 95% CI [–.15 to –.01]); and global suppression scores correlated negatively with NA identification slopes for state reappraisal (r_{meta} = –.15, 95% CI [–.22 to –.08]) and state rumination (r_{meta} = –.08, 95% CI [–.15 to –.01]). These cross-strategy findings indicate that individuals scoring higher on global rumination and suppression, their state use of *other* regulation strategies is also less contingent on recent NA intensity.

Table 3

Correlations Among Global Self-Reports and Within-Person Negative Affect (NA) Identification Slopes

	NA Identification Slopes ($NA_{t-1} \rightarrow ER_t$)					
	α_{NA}^{REAP}		α_{NA}^{SUPP}		α_{NA}^{RUM}	
Global Self-Reports	*r*	95% CI	*r*	95% CI	*r*	95% CI
Reappraisal						
ESM Study 1 (*N* = 176)	.05	-.16 to .26	.18	-.07 to .40	-.08	-.29 to .14
ESM Study 2 (*N* = 200)	.00	-.22 to .20	.20	-.03 to .40	-.04	-.25 to .18
ESM Study 3 (*N* = 46)	-.20	-.77 to .41	.13	-.51 to .69	.01	-.62 to .62
ESM Study 4 (*N* = 95)	**.38**	**.09 to .65**	-.15	-.45 to .17	.06	-.28 to .40
ESM-Event Study 1 (*N* = 101)	.22	-.03 to .46	.10	-.16 to .35	.14	-.12 to .40
ESM-Event Study 2 (*N* = 100)	-.18	-.46 to .12	.04	-.30 to .37	-.04	-.35 to .26
ESM-Event Study 3 (*N* = 112)	.09	-.25 to .44	-.14	-.47 to .20	.03	-.31 to .35
Meta-Analysis[a] (*N* = 830)	.06	-.09 to .21	.06	-.06 to .17	.00	-.07 to .07
Suppression						
ESM Study 1 (*N* = 176)	**-.25**	**-.44 to -.05**	-.04	-.26 to .19	-.04	-.25 to .16
ESM Study 2 (*N* = 200)	-.14	-.33 to .07	.01	-.20 to .22	-.07	-.26 to .14
ESM Study 3 (*N* = 46)	.01	-.61 to .60	-.41	-.85 to .20	.00	-.62 to .60
ESM Study 4 (*N* = 95)	-.03	-.35 to .30	-.20	-.50 to .11	.02	-.31 to .36
ESM-Event Study 1 (*N* = 101)	-.11	-.36 to .14	.14	-.11 to .40	-.13	-.39 to .13
ESM-Event Study 2 (*N* = 100)	-.19	-.48 to .11	-.31	-.61 to .02	-.10	-.41 to .21
ESM-Event Study 3 (*N* = 112)	-.14	-.47 to .20	-.03	-.36 to .32	-.23	-.53 to .10
Meta-Analysis[a] (*N* = 830)	**-.15**	**-.22 to -.08**	-.11	-.24 to .03	**-.08**	**-.15 to -.01**
Rumination						
ESM Study 1 (*N* = 176)	-.21	-.41 to .00	-.16	-.37 to .08	-.01	-.21 to .20
ESM Study 2 (*N* = 200)	**-.26**	**-.45 to -.06**	-.04	-.24 to .17	-.04	-.25 to .15
ESM Study 3 (*N* = 46)	.14	-.48 to .71	-.04	-.62 to .58	-.06	-.65 to .56
ESM Study 4 (*N* = 95)	**-.37**	**-.65 to -.08**	-.11	-.42 to .20	-.09	-.42 to .24
ESM-Event Study 1 (*N* = 101)	-.05	-.30 to .21	.00	-.25 to .26	-.20	-.43 to .07
ESM-Event Study 2 (*N* = 100)	-.15	-.45 to .14	.03	-.29 to .38	-.17	-.48 to .14
ESM-Event Study 3 (*N* = 112)	-.24	-.57 to .09	-.18	-.51 to .17	-.16	-.47 to .15
Meta-Analysis[a] (*N* = 830)	**-.19**	**-.29 to -.10**	**-.08**	**-.15 to -.01**	**-.09**	**-.16 to -.02**

Note. Shaded cells contain within-strategy correlations representing identification correspondence for each emotion-regulation strategy; Estimates in bold have 95% CIs that do not include zero.
[a] Meta-analyses based on Fisher *z*-transformed correlations with frequentist 95% CIs.

PA Identification Correspondence

In terms of within-strategy correlations, results revealed evidence of PA identification correspondence for suppression (r_{meta} =.11, 95% CI [.01 to .22]), but not for reappraisal or rumination. This indicates that although the average PA identification slope for state suppression was not significantly different from zero (Table S9), this slope tended to be more positive among individuals with higher global suppression self-reports. Put more simply, this suggests that those higher in global suppression tended to engage in greater state suppression following higher levels of positive affect.

Table 4

Correlations Among Global Self-Reports and Within-Person Positive Affect (PA) Identification Slopes

	PA Identification Slopes ($PA_{t-1} \rightarrow ER_t$)					
	α_{PA}^{REAP}		α_{PA}^{SUPR}		α_{PA}^{RUM}	
Global Self-Reports	*r*	95% CI	*r*	95% CI	*r*	95% CI
Reappraisal						
ESM Study 1 (*N* = 176)	-.15	-.35 to .06	-.04	-.27 to .17	.08	-.13 to .29
ESM Study 2 (*N* = 200)	-.01	-.26 to .23	-.10	-.36 to .18	.09	-.15 to .31
ESM Study 3 (*N* = 46)	.10	-.51 to .68	-.21	-.75 to .38	.04	-.55 to .64
ESM Study 4 (*N* = 95)	-.21	-.53 to .14	.29	-.04 to .60	.26	-.08 to .57
ESM-Event Study 1 (*N* = 101)	-.03	-.28 to .23	-.01	-.27 to .25	.03	-.23 to .29
ESM-Event Study 2 (*N* = 100)	.06	-.23 to .36	.04	-.31 to .38	-.08	-.40 to .23
ESM-Event Study 3 (*N* = 112)	.11	-.21 to .42	.02	-.27 to .34	.16	-.14 to .45
Meta-Analysis[a] (*N* = 830)	-.03	-.12 to .06	.00	-.10 to .11	**.09**	**.02 to .16**
Suppression						
ESM Study 1 (*N* = 176)	**.28**	**.09 to .47**	.12	-.10 to .33	-.03	-.24 to .17
ESM Study 2 (*N* = 200)	.18	-.07 to .40	-.05	-.30 to .20	.14	-.08 to .34
ESM Study 3 (*N* = 46)	-.03	-.63 to .57	.38	-.21 to .82	.04	-.55 to .63
ESM Study 4 (*N* = 95)	.03	-.30 to .37	.04	-.29 to .38	-.13	-.46 to .18
ESM-Event Study 1 (*N* = 101)	-.10	-.35 to .16	.00	-.27 to .25	.12	-.14 to .37
ESM-Event Study 2 (*N* = 100)	**.31**	**.01 to .58**	.15	-.21 to .48	.01	-.31 to .33
ESM-Event Study 3 (*N* = 112)	.25	-.05 to .54	.28	-.01 to .53	**.31**	**.01 to .58**
Meta-Analysis[a] (*N* = 830)	**.15**	**.03 to .27**	**.11**	**.01 to .22**	.07	-.04 to .18
Rumination						
ESM Study 1 (*N* = 176)	**.30**	**.10 to .49**	.12	-.10 to .34	.03	-.19 to .22
ESM Study 2 (*N* = 200)	.14	-.11 to .36	-.15	-.38 to .10	**-.22**	**-.42 to -.01**
ESM Study 3 (*N* = 46)	-.04	-.64 to .55	.12	-.48 to .68	.17	-.43 to .72
ESM Study 4 (*N* = 95)	.26	-.08 to .59	.02	-.32 to .36	-.15	-.47 to .18
ESM-Event Study 1 (*N* = 101)	.02	-.23 to .28	.02	-.24 to .28	.06	-.20 to .31
ESM-Event Study 2 (*N* = 100)	.19	-.10 to .49	.03	-.34 to .38	-.05	-.37 to .27
ESM-Event Study 3 (*N* = 112)	.18	-.12 to .49	.37	.08 to .61	.20	-.09 to .49
Meta-Analysis[a] (*N* = 830)	**.17**	**.09 to .26**	.07	-.06 to .20	-.01	-.13 to .11

Note. Shaded cells contain within-strategy correlations representing identification correspondence for each emotion-regulation strategy; Estimates in bold have 95% CIs that do not include zero.

[a] Meta-analyses based on Fisher *z*-transformed correlations with frequentist 95% CIs.

We also found evidence of cross-strategy PA identification correspondence. Specifically, global reappraisal was associated with more positive PA identification slopes for state rumination (r_{meta} =.09, 95% CI [.02 to .16]). This finding suggests that whereas decreases in PA tended to predict increased state rumination (on average), individuals higher in global reappraisal showed a weaker tendency to engage in state rumination following decreases in PA. Moreover, both global suppression (r_{meta} = .15, 95% CI [.03 to .27]) and global rumination (r_{meta} = .17, 95% CI [.09 to .26]) were reliably associated with more positive PA identification slopes for state reappraisal, suggesting those higher in global suppression and rumination tended to increase their use of reappraisal following higher intensity experiences of PA.

Implementation Correspondence

Tables 5 and 6 contain within-strategy (shaded) and cross-strategy (unshaded) correlations between global self-reports and within-person NA and PA implementation slopes, respectively. As outlined in Table 1, positive correlations would indicate that individuals with higher global self-reports for a particular strategy tend to have more positive (or less negative) implementation slopes. Put otherwise, a positive correlation would mean that global scores were associated with a stronger effect of implementing a particular regulation strategy on subsequent positive or negative affect. We first report meta-analyses of the average implementation slopes, before reporting NA and PA implementation correspondence findings for the individual studies, focusing on within-strategy correlations. Finally, we report meta-analytic findings, where we discuss both within-strategy and cross-strategy correlations.

Average Implementation Slopes

Meta-analyses of the average within-person implementation slopes revealed that daily rumination predicted increases in NA and decreases in PA, suppression predicted increases in NA and reappraisal predicted increases in PA (see Tables S10 and S11).

Table 5

Correlations Among Global Self-Reports and Within-Person Negative Affect (NA) Implementation Slopes

	NA Implementation Slopes ($ER_t \rightarrow NA_t$)					
	γ_{REAP}^{NA}		γ_{SUPR}^{NA}		γ_{RUM}^{NA}	
Global Self-Reports	*r*	95% CI	*r*	95% CI	*r*	95% CI
Reappraisal						
ESM Study 1 (*N* = 176)	-.05	-.24 to .14	.06	-.15 to .26	-.17	-.34 to .02
ESM Study 2 (*N* = 200)	-.15	-.35 to .06	-.11	-.30 to .08	-.15	-.34 to .02
ESM Study 3 (*N* = 46)	.06	-.53 to .62	-.11	-.69 to .49	-.16	-.72 to .43
ESM Study 4 (*N* = 95)	-.04	-.38 to .27	-.08	-.37 to .23	.07	-.21 to .34
ESM-Event Study 1 (*N* = 101)	.00	-.27 to .27	.10	-.26 to .41	.04	-.23 to .30
ESM-Event Study 2 (*N* = 100)	-.14	-.43 to .15	.20	-.12 to .49	-.05	-.35 to .24
ESM-Event Study 3 (*N* = 112)	-.04	-.35 to .26	-.16	-.43 to .13	.14	-.14 to .41
Meta-Analysis[a] (*N* = 830)	**-.07**	**-.14 to -.002**	-.01	-.11 to .09	-.04	-.14 to .05
Suppression						
ESM Study 1 (*N* = 176)	-.18	-.35 to .02	**-.23**	**-.44 to -.03**	-.01	-.20 to .17
ESM Study 2 (*N* = 200)	.08	-.13 to .27	.04	-.14 to .23	-.11	-.29 to .07
ESM Study 3 (*N* = 46)	-.09	-.64 to .50	-.04	-.62 to .54	.01	-.58 to .57
ESM Study 4 (*N* = 95)	**.34**	**.00 to .62**	-.19	-.47 to .10	-.16	-.41 to .14
ESM-Event Study 1 (*N* = 101)	-.02	-.29 to .25	.02	-.29 to .34	.11	-.16 to .37
ESM-Event Study 2 (*N* = 100)	.18	-.47 to .11	.06	-.27 to .36	.08	-.22 to .35
ESM-Event Study 3 (*N* = 112)	-.01	-.33 to .30	-.11	-.38 to .19	.01	-.27 to .29
Meta-Analysis[a] (*N* = 830)	-.01	-.14 to .13	-.07	-.17 to .03	-.02	-.09 to .05
Rumination						
ESM Study 1 (*N* = 176)	**-.35**	**-.52 to -.17**	-.18	-.38 to .04	.12	-.07 to .31
ESM Study 2 (*N* = 200)	**-.23**	**-.41 to -.03**	-.02	-.22 to .17	.02	-.17 to .21
ESM Study 3 (*N* = 46)	-.27	-.76 to .31	.04	-.54 to .62	.35	-.22 to .81
ESM Study 4 (*N* = 95)	-.03	-.35 to .30	.02	-.29 to .32	.16	-.12 to .44
ESM-Event Study 1 (*N* = 101)	.00	-.27 to .26	.10	-.20 to .41	.01	-.25 to .28
ESM-Event Study 2 (*N* = 100)	-.12	-.39 to .18	.01	-.31 to .31	.21	-.07 to .48
ESM-Event Study 3 (*N* = 112)	.04	-.26 to .36	-.08	-.38 to .21	.03	-.25 to .31
Meta-Analysis[a] (*N* = 830)	**-.14**	**-.26 to -.02**	-.03	-.11 to .04	**.10**	**.03 to .17**

Note. Shaded cells contain within-strategy correlations representing implementation correspondence for each emotion-regulation strategy; Estimates in bold have 95% CIs that do not include zero.
[a] Meta-analyses based on Fisher *z*-transformed correlations with frequentist 95% CIs.

Table 6

Correlations Among Global Self-Reports and Within-Person Positive Affect (PA) Implementation Slopes

	PA Implementation Slopes ($ER_t \rightarrow PA_t$)					
	γ_{REAP}^{PA}		γ_{SUPR}^{PA}		γ_{RUM}^{PA}	
Global Self-Reports	*r*	95% CI	*r*	95% CI	*r*	95% CI
Reappraisal						
ESM Study 1 (*N* = 176)	.05	-.14 to .23	.05	-.16 to .26	.12	-.07 to .30
ESM Study 2 (*N* = 200)	-.04	-.29 to .23	-.04	-.27 to .19	.10	-.11 to .32
ESM Study 3 (*N* = 46)	-.14	-.70 to .48	.02	-.57 to .61	.10	-.51 to .68
ESM Study 4 (*N* = 95)	.19	-.18 to .51	.30	-.04 to .61	-.16	-.44 to .13
ESM-Event Study 1 (*N* = 101)	-.18	-.43 to .08	-.08	-.40 to .26	-.01	-.28 to .27
ESM-Event Study 2 (*N* = 100)	.11	-.21 to .40	-.05	-.34 to .26	.09	-.21 to .38
ESM-Event Study 3 (*N* = 112)	-.01	-.31 to .27	.15	-.12 to .43	.02	-.25 to .28
Meta-Analysis (*N* = 830)	.01	-.08 to .09	.05	-.05 to .15	.05	-.02 to .12
Suppression						
ESM Study 1 (*N* = 176)	**.28**	**.10 to .44**	**.27**	**.06 to .46**	.13	-.06 to .31
ESM Study 2 (*N* = 200)	.04	-.22 to .29	-.05	-.27 to .17	.05	-.15 to .26
ESM Study 3 (*N* = 46)	-.08	-.64 to .54	.17	-.41 to .72	-.20	-.74 to .39
ESM Study 4 (*N* = 95)	-.11	-.47 to .26	-.05	-.38 to .28	.12	-.18 to .40
ESM-Event Study 1 (*N* = 101)	.06	-.21 to .32	.06	-.24 to .36	-.05	-.33 to .23
ESM-Event Study 2 (*N* = 100)	.19	-.12 to .47	.06	-.25 to .34	.14	-.15 to .41
ESM-Event Study 3 (*N* = 112)	.13	-.19 to .42	.07	-.23 to .34	-.24	-.48 to .03
Meta-Analysis (*N* = 830)	.09	-.02 to .20	.07	-.03 to .17	.01	-.11 to .12
Rumination						
ESM Study 1 (*N* = 176)	**.49**	**.34 to .64**	.17	-.04 to .38	-.04	-.23 to .15
ESM Study 2 (*N* = 200)	.11	-.15 to .35	-.07	-.29 to .16	.03	-.18 to .25
ESM Study 3 (*N* = 46)	.15	-.47 to .70	-.28	-.75 to .33	.10	-.47 to .68
ESM Study 4 (*N* = 95)	.03	-.32 to .41	-.03	-.38 to .32	-.11	-.40 to .19
ESM-Event Study 1 (*N* = 101)	-.04	-.30 to .22	-.09	-.39 to .20	-.03	-.30 to .24
ESM-Event Study 2 (*N* = 100)	.18	-.13 to .47	.08	-.22 to .37	-.15	-.43 to .14
ESM-Event Study 3 (*N* = 112)	.00	-.29 to .29	.09	-.20 to .38	-.05	-.36 to .18
Meta-Analysis (*N* = 830)	.14	-.01 to .30	.00	-.10 to .10	-.04	-.11 to .03

Note. Shaded cells contain within-strategy correlations representing implementation correspondence for each emotion-regulation strategy; Estimates in bold have 95% CIs that do not include zero.
[a] Meta-analyses based on Fisher *z*-transformed correlations with frequentist 95% CIs.

NA Implementation Correspondence

In terms of within-strategy correlations, we found evidence of NA implementation correspondence for reappraisal (r_{meta} = –.07, 95% CI [–.14 to –.002]), and rumination (r_{meta} = .10, 95% CI [.03 to .17]) but not for suppression. For reappraisal, although the average NA implementation slope was not significantly different from zero (see Table S10), individuals scoring higher on global reappraisal tended to have more negative NA implementation slopes. This suggests that those higher on global reappraisal tended to experience larger reductions in NA following state reappraisal. For rumination, the average NA implementation slope was positive (see Table S10) and was stronger among individuals with higher global rumination scores. This suggests that individuals with higher global rumination scores tended to experience larger increases in NA following rumination. Furthermore, we found evidence of cross-strategy implementation correspondence among global rumination and state reappraisal (r_{meta} = –.14, 95% CI [–.26 to –.02]), implying that state reappraisal was associated with greater decreases in NA among individuals higher on global rumination.

PA Implementation Correspondence

Meta-analyses across all ESM and ESM-Event studies revealed no reliable evidence of PA implementation correspondence either within or across emotion-regulation strategies.

Unique Effects of Selection, Identification, and Implementation on Global Self-Reports

To test whether our main correlational findings held when controlling for potential overlap among the three stages of daily emotion regulation, we repeated our main analyses using multiple regression. Global scores on each strategy were regressed onto selection, identification, and implementation for each strategy (as simultaneous predictors). To reduce multicollinearity, these models did not include cross-strategy effects and we ran separate analyses for NA (Table S12) and PA (Table S13). Results of these analyses (reported in Tables S12 and S13 in the supplemental materials) largely mirrored our main correlational findings: global reappraisal was not reliably predicted by selection, identification, or implementation of state reappraisal, for either NA or PA. In contrast, global suppression was uniquely positively predicted by selection and PA identification slopes for daily suppression. Finally, global rumination scores were uniquely positively predicted by selection and NA implementation slopes for daily rumination; and were negatively predicted by NA identification slopes for daily rumination.

Summary of Results

Table 7 provides a summary of our findings across strategies and stages of the emotion regulation process, considering both our main correlational analyses (see Tables 2 to 6) and our supplemental analyses controlling for shared variance among regulation stages for each strategy (see Tables S12 and S13).

Table 7

Summary of Results Across Studies, Strategies, and Stages of Emotion Regulation Theory.

Daily Regulation Strategy and Stage		Global Regulation Strategy: Reappraisal	Suppression	Rumination
Reappraisal	Selection	.14	×	.13
	NA Identification	×	–.15	–.19
	PA Identification	×	.15	.17
	NA Implementation	–.07	×	–.14
	PA Implementation	×	×	×
Suppression	Selection	×	.30✓	.25
	NA Identification	×	×	–.08
	PA Identification	×	.11✓	×
	NA Implementation	×	×	×
	PA Implementation	×	×	×
Rumination	Selection	×	.13	.40✓
	NA Identification	×	–.08	–.09✓
	PA Identification	.09	×	×
	NA Implementation	×	×	.10✓
	PA Implementation	×	×	×

Note. Estimates above are statistically significant meta-analytic correlations from the main analyses reported in Tables 2-6; Within-strategy effects are shown in shaded cells. × = non-significant associations; ✓ = effect replicated in supplemental analyses controlling for shared variance among regulatory stages for each strategy (see Tables S12 and S13 in supplemental materials).

Overall, our findings suggest that global self-report measures of reappraisal, suppression, and rumination may not strongly and uniquely correlate with individual differences in daily selection of these strategies. Indeed, meta-analytic correlations representing selection correspondence ranged from weak (reappraisal: r = .14) to moderate (suppression: *r* = .30; rumination: *r* = .40) and these associations were not unique to each strategy: global rumination scores also correlated at *r* = .13 and .25 with daily selection of reappraisal and suppression, respectively. Similarly, global suppression correlated at *r* = .13 with daily reports of rumination.

In terms of identification correspondence, global rumination and suppression scores were consistently negatively associated with NA identification slopes. This suggests that those higher in global rumination and suppression used emotion regulation strategies in a way that was *less* contingent on their preceding NA intensity. Once again, however, these associations were not strategy-specific: global rumination scores correlated negatively with NA identification slopes for rumination (*r* = –.09), reappraisal (*r* = –.19), and suppression (*r* = –.08), whereas global suppression correlated negatively with NA identification slopes for reappraisal (*r* = –.15) and rumination (*r* = –.08), but not with daily NA identification slopes for suppression itself. We also found consistently positive associations between daily PA identification slopes and global self-reports, suggesting people who score higher on the trait scales used emotion regulation strategies more when they felt more positive affect. Again, however, these were not strategy-specific: global suppression scores correlated positively with daily PA identification slopes for suppression (*r* = .11) and reappraisal (*r* = .15). In contrast, global reappraisal correlated only with daily PA identification for rumination (*r* = .09), and global rumination scores correlated only with daily PA identification for reappraisal (*r* = .17).

We found more limited, strategy-specific, evidence for implementation correspondence in the case of rumination, indicating that people scoring higher on trait rumination tended to feel worse after using daily rumination. This was reflected in a positive correlation between global rumination scores and daily NA implementation slopes for rumination (*r* = .10), but not with implementation slopes for other strategies. Although global reappraisal correlated negatively with NA implementation slopes for daily reappraisal (*r* = –.07), so did global rumination scores (*r* =–.14), suggesting that people scoring higher on these scales tended to feel better after using daily reappraisal. We found no evidence of correspondence between global self-reports and daily PA implementation slopes across strategies.

Finally, our supplemental analyses controlling for shared variance among daily strategies revealed that global suppression scores were uniquely predicted by daily selection and PA identification slopes, and global rumination scores were uniquely predicted by daily selection, NA identification, and NA implementation. In contrast, no unique predictors of global reappraisal scores emerged.

Discussion

Thousands of studies have used global self-report questionnaires to assess habitual emotion-regulation strategy selection. Yet, we know little about how such global measures correspond with daily emotion regulation processes. Drawing on the stages of emotion regulation proposed in Gross's (2015) extended process model, we mapped global emotion regulation measures onto operationalizations of the identification, selection, and implementation stages of daily emotion regulation using data from nine daily life studies. Below, we interpret our main findings relating to each stage of regulation, discuss their theoretical and methodological implications, and finally acknowledge limitations and propose future directions for research on emotion regulation in daily life.

Selection Correspondence

Our meta-analyses revealed weak-to-moderate positive correlations (.14 ≤ *r*s ≤ .40) between global self-reports and the stable between-person component of daily self-reports, representing individual differences in selection of emotion-regulation strategies (see Table 7). This correspondence between global and daily self-reports was weaker than what is typically observed for broad personality dimensions, such as the Big Five domains (e.g., Augustine & Larsen, 2012; Finnigan & Vazire, 2018; Fleeson & Gallagher, 2009). Rather, our findings were closer to the degree of correspondence between global and momentary self-reports of narrower constructs, such as specific emotions (e.g., anxiety and anger; Edmondson et al., 2013) or Big Five aspects (Rauthmann et al., 2018).

Selection correspondence differed across strategies (see Table 2), with stronger evidence of selection correspondence for rumination and suppression than for reappraisal. Indeed, the weak meta-analytic correlation between global and daily reappraisal selection (r = .14) suggests that the ERQ reappraisal scale cannot be straightforwardly interpreted as an index of the tendency to habitually select reappraisal in daily life. This is problematic given the widespread assumption that this scale taps individual differences in trait reappraisal. In light of these findings, we suggest that researchers interpret the ERQ reappraisal subscale cautiously, and call for future methodological research to further probe how the measure may be adapted to align more closely with its intended measurement target (see e.g., Tamir et al., 2019). In contrast, the evidence for suppression selection correspondence was comparatively stronger, suggesting that the ERQ suppression subscale may better index regular use of this strategy than its reappraisal-subscale counterpart.

Finally, the strongest selection correspondence was between global and daily self-reports of rumination, an association that was more than twice as strong as that for reappraisal. We offer three possible reasons for these findings. The first relates to memory encoding: rumination is inherently perseverative, temporally extended, and intrusive (Kircanski et al., 2015; Nolen-Hoeksema et al., 2008), which may make daily use of this strategy more memorable. This should lead to fairly strong encoding of rumination episodes into memory, which may influence people's global self-reports (Schwarz, 2012). Relatedly, our findings suggest that rumination may be more strongly tied with daily affective experience than other regulation strategies. Specifically, relative to reappraisal and suppression, daily rumination was more strongly (i) predicted by affect at the previous occasion (see supplemental Tables S8 and S9), and (ii) predictive of future affect (see supplemental Tables S10 and S11). Given that emotions tend to be weighted heavily in human memory (e.g., Kensinger, 2009; Rozin & Royzman, 2001), the strong links between affect and rumination may make it easier for people to recall episodes of rumination relative to other regulation strategies. These memory traces may become integrated into abstract self-knowledge, leading to fairly strong correspondence between global and daily self-reports of rumination use—a kind of associative mechanism linking repeated short-term state dynamics with long-term trait tendencies (Wrzus & Roberts, 2017).

A second explanation for the stronger selection correspondence we observed for rumination is that global self-reports of rumination may be a proxy for general distress. This may partly account for our finding that global rumination scores also correlated reliably with the between-person components of daily reappraisal and suppression (see Table 7). If global rumination is a proxy for general distress, it may be associated with higher regulatory effort across multiple strategies. Supporting this view, Aldao et al.'s (2010) meta-analysis revealed that global rumination scores correlated more strongly with psychopathology symptoms than global self-reports of other emotion-regulation strategies.

Finally, we note that matching between daily and global items may also partly account for differences in selection correspondence between strategies. Whereas suppression and rumination (or at least its brooding component) are arguably unidimensional constructs, reappraisal may be more heterogeneous (see e.g., McRae et al., 2012a; Uusberg et al., 2019). The multi-faceted nature of reappraisal makes it more difficult to assess comprehensively, particularly in daily life studies, which often use single-item measures. Thus, future studies should focus on assessing reappraisal selection correspondence using multi-item measures in daily life, paying particular attention to the specific form(s) of reappraisal being measured.

Identification Correspondence

Our meta-analyses for NA identification correspondence showed that global rumination scores correlated negatively with NA identification slopes for state rumination. Given that, on average, state rumination tended to increase following heightened NA (see NA identification slopes in Table S8), this finding implies that global rumination scores were associated with a weaker contingency between state rumination and preceding levels of unpleasant affect. Similarly, global rumination scores were negatively related to NA identification slopes for state reappraisal and suppression (see Table 7). Thus, daily use of all three regulation strategies was less contingent upon recent levels of unpleasant affect among individuals reporting higher levels of global rumination.

Taken together with our findings for selection correspondence, these results suggest that global rumination is associated with greater, but less context-sensitive, use of multiple emotion-regulation strategies in daily life. In other words, individuals scoring higher on global rumination may tend to deploy multiple emotion-regulation strategies relatively indiscriminately, regardless of whether they feel mildly or intensely unpleasant. This aligns with a recent study showing global rumination was associated with more unpredictable patterns of state rumination in daily life (Fang et al., 2019). Such behavior may be driven by context-inappropriate activation of a goal to regulate unpleasant affect during the identification stage (Sheppes et al., 2015).

In terms of PA identification correspondence, we found that global suppression was associated with more positive PA identification slopes for state suppression. Thus, although PA did not predict suppression on average (see Table S9), high global suppressors were more likely to use suppression in daily life when experiencing above-average PA. Here, our findings deviate from previous research examining how global measures of suppression relate to affect-dependent use of state suppression in the lab and in daily life (Peters et al., 2020). For instance, whereas Peters and colleagues reported that ERQ suppression scores were associated with a greater tendency to deploy situational suppression in response to negative emotions, we did not find reliable evidence of NA identification correspondence for suppression. This may be because we assessed state suppression in everyday life, where negative emotions may be less frequent and intense, whereas Peters et al. (2020) measured suppression during negative social interactions and romantic conflicts. Although Peters et al. (2020) did not assess positive emotions, the current findings align with their speculation that global suppression measures (e.g., the ERQ suppression subscale) may correlate with greater state use of suppression in response to PA. This finding is also broadly consistent with previous research linking global self-reported suppression with a tendency to inhibit the expression of positive emotions (Kashdan & Breen, 2008).

Implementation Correspondence

Our meta-analyses testing implementation correspondence revealed that global reappraisal correlated negatively with NA implementation slopes for state reappraisal. Although state reappraisal did not predict decreases in NA on average (see Table S10), people scoring higher on the ERQ reappraisal subscale tended to report larger NA decreases following their use of reappraisal in daily life. In line with some past work (Ford et al., 2017; McRae et al., 2012b), our finding suggests the ERQ reappraisal subscale may measure how effectively reappraisal is implemented as well as indexing its habitual selection. Thus, although reappraisal may be relatively difficult to implement, and therefore had no overall influence on unpleasant feelings in daily life, individuals who use reappraisal more often may become more proficient at implementing it (cf. Denny & Ochsner, 2014).

However, tempering the above conclusions, this finding was not robust to controlling for individual differences in identification and selection of reappraisal in daily life (see multiple regression results in Table S12). Furthermore, global rumination scores were also associated with more negative NA implementation slopes for state reappraisal, indicating that people who reported being high in global rumination also showed larger decreases in NA following state reappraisal, an indicator of more effective implementation of reappraisal in daily life. One possibility is that processes common to rumination and reappraisal may play a role here (Grisham et al., 2011), but given the dearth of studies on such shared mechanisms this requires further investigation.

Finally, global rumination scores correlated positively with NA implementation slopes for state rumination. Given that, on average, state rumination predicted increases in NA across time (see Table S10), this indicates that state rumination is more harmful (in terms of increasing NA) among individuals scoring higher on global rumination (Gerin et al., 2006; Johnson et al., 2012). Considered together with our findings for selection and identification correspondence, this suggests that individuals scoring high on global rumination not only have a greater tendency to select rumination as a regulation strategy in daily life, but also engage in state rumination regardless of how unpleasant they are feeling, and with more detrimental effects on their subsequent affective experience.

Theoretical and Methodological Implications

Our results caution against a straightforward interpretation of global measures as representing individual differences in strategy selection. Indeed, our meta-analytic findings indicate that global self-report measures of a given emotion-regulation strategy may not align strongly or specifically with trait selection of that strategy in daily life. In particular, the ERQ reappraisal subscale appears to correspond only weakly with the tendency to select reappraisal in daily life. In contrast, global self-reports of suppression and rumination showed stronger correspondence with average daily strategy selection. However, these associations were not strategy-specific: global rumination scores correlated almost as strongly with daily reappraisal and suppression as did global reports of these same strategies (see also McMahon & Naragon-Gainey, 2020). We also found that global self-reports of rumination and suppression correlated reliably with identification and implementation slopes for other strategies. Thus, taken together, these findings undermine the discriminant validity of self-report measures of emotion regulation and suggest that more sensitive, strategy-specific, assessment is needed.

The fact that global self-reports correlated with identification and implementation, albeit less strongly than with selection, highlights an important misalignment between theory and measurement: while theoretical models of emotion regulation have moved beyond a predominant focus on strategy selection, our measurement tools have not caught up. As noted earlier, existing global self-report measures may already (unintentionally) capture identification or implementation by referring to emotional antecedents or consequences of regulation in their items (e.g., as in the ERQ suppression item: “When I am feeling negative emotions, I make sure not to express them”; or in the ERQ reappraisal item: “When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about”). This partly mitigates our concerns regarding the relatively weak selection correspondence observed, but at the same time may amplify the concern that we did not observe stronger or more consistent identification and/or implementation correspondence. Thus, there is a clear need to develop global self-report instruments that map onto recent theory by separately assessing the identification, selection, and implementation stages of emotion regulation (see e.g., Preece et al., 2021), and to examine how such new global measures correspond with daily regulation processes. Overall, however, our findings indicate that popular global self-report measures may index other aspects of the regulation process aside from strategy selection, suggesting that they should not be considered purely as measures of habitual strategy use.

Our selection correspondence findings also have implications for theorizing on the alignment between global and momentary self-reports more generally. Our results align with Robinson and Clore's (2002) accessibility model, which predicts divergence between global and daily measures. In contrast whole trait theory predicts relatively strong correspondence between global and daily measures of the Big Five (Fleeson & Jayawickreme, 2015). However, it does not appear to generalize to narrower constructs, such as emotion-regulation strategies. Whereas the Big Five represent broad dimensions, each subsuming several affective, behavioral, and cognitive tendencies (DeYoung, 2015), emotion-regulation strategies are more specific cognitive or behavioral actions. Thus, we speculate that selection correspondence may be stronger for higher-order dimensions of emotion regulation (e.g., avoidance, engagement; McMahon & Naragon-Gainey, 2020). In addition, our findings suggest that global self-report measures of emotion regulation not only index the location (i.e., central tendency) of a person's density distribution of states (Fleeson & Jayawickreme, 2015), but also index individual differences in dynamics, such as the temporal contingencies between state emotion regulation and state affect (cf. Geukes et al., 2018).

Limitations and Future Directions

We note several limitations of the current study and suggest possible directions for future research. First, our operationalizations of the three stages of emotion regulation in daily life should be considered preliminary. For example, our operationalization of identification (i.e., the slope of lagged affect predicting current regulation strategy use) did not directly represent the activation of a regulation goal—a key element of the identification stage (Gross, 2015). Further, because we operationalized identification in a strategy-specific manner, we may have also captured strategy selection to a certain extent. Finally, because we cannot definitively conclude that regulation strategy use reported "since the last survey" temporally preceded affect in our operationalization of implementation (i.e., the slope of regulation strategy use predicting affect at the same occasion), we may also have indexed identification processes, such as the activation of regulation goals, in our measure of implementation. Our multiple regression analyses (see Tables S12 and S13) sought to mitigate these concerns by examining the unique associations between each stage of daily regulation with global self-reports. However, future research should explore alternate operationalizations of identification and implementation in daily life, such as measuring self-reported regulation goals (identification) and regulation success (implementation) as a way of validating our proposed operationalizations.

Second, we focused on three strategies among many that people routinely use to regulate emotions in daily life (Heiy & Cheavens, 2014; Parkinson & Totterdell, 1999). We selected these three strategies because they are among the most widely studied in the emotion regulation literature (see e.g., Naragon-Gainey et al., 2017; Webb et al., 2012a). Thus, we believe that despite our limited focus, the current investigation is relevant to a large proportion of emotion regulation research. Nevertheless, future studies should investigate correspondence between global and daily self-reports of other emotion-regulation strategies (see e.g., Lavender et al., 2017; Medland et al., 2020).

Third, although our meta-analytic approach aimed to increase the robustness of our findings, our analyses are nevertheless based on a relatively small number of studies, collected using similar methods and samples. This limits our ability to draw more fine-grained conclusions about the boundary conditions and moderators of correspondence between global and daily self-reports of emotion regulation. For example, future studies should investigate the potential influence of methodological factors, such as ESM sampling frequency (approximately 1-2 hours in the studies reported here) and study duration (which was 7-9 days in all but one of the studies included here), which have been shown to influence correspondence between daily and global measures in other domains (Fleeson & Gallagher, 2009). Similarly, given that relatively low levels of negative affect were reported across most of our studies (see Table S6), future research should explore how daily-global correspondence for emotion-regulation strategies differs in samples characterized by greater emotional distress, who presumably have a greater need for emotion regulation. For instance, McMahon and Naragon-Gainey's (2020) findings suggest that selection correspondence for a range of regulation strategies may be stronger in treatment-seeking adults.

Fourth, the current study cannot speak to the validity of daily self-reports. Although daily self-reports reduce retrospective biases by assessing emotion-regulation strategies closer to the time and context in which they are used, they are not immune from other sources of bias (Conner & Barrett, 2012; Finnigan & Vazire, 2018; Schwarz, 2012). For instance, daily self-reports may be biased because people have imperfect insight into their behavior (Sun & Vazire, 2019) or because they are motivated to deny socially undesirable behavior (Gosling et al., 1998). Further research is needed to establish the validity of daily measures of emotion regulation. However, recent research examining the correspondence between daily self-reported feelings and observed verbal (Sun & Vazire, 2019) and written (Kross et al., 2019) expression of emotions highlights the challenges in finding a suitable validation criterion for daily self-reports. Given the limitations inherent in all self-report methods (Paulhus & Vazire, 2007), we submit that neither global nor daily self-reports should be considered "gold-standard" measures of emotion-regulation strategy use in daily life. Rather, in combination, these measures can be used to provide new insights into emotion regulation in ways that we and others have begun to explore.

Concluding Remarks

Research on emotion regulation has grown exponentially over the past few decades and much of this work has relied on global self-report measures. In this study, we mapped global self-report measures to operationalizations of identification, selection, and implementation of emotion-regulation strategies in daily life. Overall, our findings suggest that global self-report measures of rumination and suppression (but not reappraisal) correspond relatively well with trait strategy selection in daily life, but not necessarily in a strategy- or process-specific manner. Thus, global self-reports of one emotion-regulation strategy may index individual differences in the selection of other strategies, as well as processes occurring during the identification and implementation stages of regulation. This research begins the work of understanding how daily and global measures relate to one another, with the promise of better understanding how to deploy these in order to accurately understand and study emotion regulation.

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Supplemental Materials

Table of Contents

Supplementary Methods

Tables S1 provides an overview of the methodological details of all studies analyzed in the current report.

Table S1

Methodological Details of all Studies

Study	Final Sample	Age *M* (*SD*)	Females	Context	Daily Diary / ESM Protocol: Surveys Per Day × Study Duration	Daily sampling window	Inter-survey interval	Compliance *M* (*SD*)	Previous Publication
Diary Study 1	*N* = 114 USA (MT)	35.23 (11.87)	50%	Negative events	1 Diary × 7 days (*T* ~ 7)	Sent at 7 p.m., completed by 11a.m.	24 ± 16 hr	98% (7%)	Kalokerinos et al. (2017)
Diary Study 2	*N* = 153 USA (UG)	18.70 (1.07)	56%	Daily life	1 Diary × 21 days (*T* ~ 21)	Sent at 8 p.m., completed by 7 a.m.	24 ± 11 hr	89% (18%)	Nezlek & Kuppens (2008)
ESM Study 1	*N* = 176 AUS (CO)	27.15 (9.03)	66%	Daily life	9-10 ESMs × 21 days (*T* ~ 200)	10 a.m. to 10 p.m.	80 ± 30 min	85% (12%)	Grommisch et al. (2019)
ESM Study 2	*N* = 200 BEL (UG)	18.32 (0.96)	55%	Transition to university	10 ESMs × 7 days (*T* ~ 70)	10 a.m. to 10 p.m.	72 ± 29 min[#]	87% (9%)	Koval et al. (2015)
ESM Study 3	*N* = 46 AUS (UG)	21.57 (3.88)	54%	Daily life	10 ESMs × 7 days (*T* ~ 70)	Participants' waking hours	81 ± 37 min[#]	78% (13%)	Brans et al. (2013), Study 1
ESM Study 4	*N* = 95 BEL (UG)	19.06 (1.28)	62%	Daily life	10 ESMs × 7 days (*T* ~ 70)	Participants' waking hours	73 ± 29 min[#]	92% (6%)	Brans et al. (2013), Study 2
ESM-Event Study 1	*N* = 101 BEL (UG)	18.64 (1.45)	86%	Exam results	10 ESMs × 9 days (*T* ~ 90)	10 a.m. to 10 p.m.	72 ± 30 min[#]	91% (7%)	Kalokerinos et al., (2019), Study 2
ESM-Event Study 2	*N* = 100 BEL (CO)	24.12 (6.87)	77%	Emotional events	7 ESMs × 14 days (*T* ~ 100)	10 a.m. to 10 p.m.	103 ± 42 min[#]	89% (10%)	Dejonckheere et al., (2019)
ESM-Event Study 3	*N* = 112 AUS (UG)	21.20 (3.58)	68%	Emotional Events	8 ESMs × 7 days (T ~ 56)	9 a.m. to 9 p.m.	90 ± 20 min	84% (10%)	Medland et al., (2020)

Note. USA = United States of America; AUS = Australia; BEL = Belgium; UG = Undergraduate; CO = Community; MT = Mechanical Turk. ESM = Experience Sampling Method; Diary = Daily Diary; *T* = maximum number of measurement occasions per participant; [#]Observed *M* ± *SD* inter-survey interval is reported.

Data Exclusions

Consistent with previous publications reporting analyses of each data set (see Table S1 for references), we excluded data from several participants for a variety of reasons. Specifically, we excluded participants due to (i) low compliance with the daily diary or ESM protocol (n = 6 in Diary Study 1; n = 3 in ESM Study 1; n = 2 in ESM Study 2; n = 4 in ESM Study 3; n = 1 in ESM Study 4; n = 4 in ESM-Event Study 2; and n = 11 in ESM-Event Study 3); (ii) due to technical errors (n = 3 in ESM Study 4; and n = 5 in ESM-Event Study 3); (iii) due to voluntary withdrawal from the study (n = 1 in ESM Study 4; and n = 4 in ESM-Event Study 3) or (iv) for failing attention checks (n = 1 in Diary Study 1).

Table S2

Daily Self-Report Items Assessing Emotion Regulation Strategies in All Studies

Study	Reappraisal item(s)	Suppression item(s)	Rumination item(s)	Response Scale
Diary Study 1	I changed my perspective or the way I was thinking about the event.	I suppressed the outward expression of my emotions.	I ruminated or dwelled on the event or my emotions.	7-point scale: 1 = *I did not do this at all* 2 = *I did this a little bit* 7 = *I did this very much*
Diary Study 2	1. When I wanted to feel more positive emotion (such as happiness or amusement), I changed what I was thinking about. 2. When I wanted to feel less negative emotion, I changed what I was thinking about. 3. When I wanted to control my emotions, I was not likely to change the way I thought about the situation (reversed).	1. When I was feeling positive emotions, I was careful not to express them. 2. When I felt negative emotions (such as sadness, nervousness, or anger), I was careful not to express them. 3. I controlled my emotions by not expressing them.	1. How much time did you spend “ruminating” or dwelling on things that happened to you for a long time afterward? 2. Today I played back over my mind how I acted in a past situation. 3. How much time did you spend rethinking things that are over and done with?	7-point scale: 1= *not at all characteristic of me* 7= *very characteristic of me*
ESM Study 1	1. I changed the way I was thinking about the situation. 2. I took a step back and looked at things from a different perspective.	I was careful not to express my emotions to others.	I thought over and over again about my emotions.	Slider scale: 0 = not at all 100 = very much
ESM Study 2	Have you looked at the cause of your feelings from another perspective?	Have you suppressed the expression of your feelings?	1. Have you ruminated about something in the past? 2. Have you ruminated about something in the future?	Slider scale: 0 = not at all 100 = very much
ESM Study 3	I have changed the way I think about what causes my feelings	I have avoided expressing my emotions	1. I couldn’t stop thinking about my feelings. 2. I have been focusing on my feelings. 3. I have been focusing on my problems.	6-point scale: 0 = not at all 5 = very much

ESM Study 4	Have you looked at the cause of your feelings from another perspective?	Have you suppressed the expression of your feelings?	Have you ruminated?	Slider scale: 1 = *not at all* 100 = *very much*
ESM-Event Study 1	Have you looked at your grades and the emotions that go with them from another perspective?	Have you suppressed the outward expression of your emotions about your grades?	Did you ruminate about your grades?	7-point scale: 0 = *not at all* 1 = *a little bit* 6 = *very much*
ESM-Event Study 2	To what extent did you try to change the way you were thinking about the event in order to change its emotional impact?	To what extent did you suppress the outward expression of your emotions?	How much did you ruminate on the event or your emotions?	Slider scale: 1 = *not at all* 100 = *very much*
ESM-Event Study 3	1. I thought of other ways to interpret the situation. 2. I looked at the situation from several different angles.	1. I made an effort to hide my feelings. 2. I pretended I wasn't upset.	1. I thought about the emotional event again and again. 2. I continually thought about what was bothering me.	Slider scale: 0 = *not at all* 100 = *very much*

Note. For all Daily Diary items, participants were instructed to rate their use of emotion regulation strategies in relation to "today". In all ESM and ESM-Event studies, participants were instructed to rate their use of emotion regulation strategies "since the last survey".

Table S3

Daily Self-Report Items Assessing Positive and Negative Affect in ESM and ESM-Event Studies

Study	Negative Affect item(s)	Positive Affect item(s)	Response Scale
ESM Study 1	Angry, Sad, Stressed	Happy, Relaxed, Confident	Slider scale: 0 = *not at all* 100 = *very much*
ESM Study 2	Angry, Sad, Stressed, Anxious, Depressed	Happy, Relaxed, Excited	Slider scale: 0 = *not at all* 100 = *very much*
ESM Study 3	Angry, Stressed, Anxious, Depressed	Happy, Relaxed	6-point scale: 0 = *not at all* [*e.g., angry*] 5 = *very* [*e.g., angry*]
ESM Study 4	Angry, Sad, Anxious, Depressed	Happy, Relaxed	Slider scale: 1 = *not at all* 100 = *very much*
ESM-Event Study 1	Angry, Sad, Stressed, Anxious, Ashamed, Disappointed	Happy, Proud, Content, Relief	Slider scale: 0 = *not at all* 100 = *very much*
ESM-Event Study 2	Angry, Sad, Stressed	Happy, Relaxed	Slider scale: 1 = *not at all* 100 = *very much*
ESM-Event Study 3	What is the strongest negative emotion you have experienced in the last hour? (select one: *angry/frustrated*, *sad/disappointed*, *anxious/stressed*, *embarrassed/self-conscious*) How intense was the negative emotion?	How are you feeling right now?	Slider scale: Negative Affect: 0 = *Not at all, I barely noticed* 100 = *Very intense* Positive Affect: -10 = *very negative* 0 = *neutral* +10 = *very positive*

Note. All affect items assessed momentary feelings (e.g., "How angry do you feel at the moment?") except the Negative Affect item in ESM-Event Study 3, which assessed emotional intensity "in the last hour".

Supplementary Results

Descriptive Statistics

Below, we report descriptive statistics and reliability estimates for global self-reports of emotion regulation strategies (Table S4) and daily self-reports of emotion regulation strategies (Table S5) across all nine studies. We also report the descriptive statistics and reliabilities for daily self-reports of negative (NA) and positive affect (PA) in the seven ESM and ESM-Event studies, in which affect ratings were analyzed (Table S6).

Table S4

Descriptive Statistics and Reliabilities for Global Self-Report Measures of Emotion Regulation

	Reappraisal			Suppression			Rumination		
Study	*M*	*SD*	α	*M*	*SD*	α	*M*	*SD*	α
Diary Study 1	4.99	1.18	.93	3.89	1.38	.81	2.02	0.79	.87
Diary Study 2	4.46	1.08	.86	3.44	1.27	.79	4.27	1.25	.94
ESM Study 1	4.99	1.08	.86	3.86	1.42	.82	2.28	0.66	.73
ESM Study 2	4.63	0.93	.75	3.43	1.24	.80	2.07	0.61	.74
ESM Study 3	4.85	0.99	.83	3.94	1.21	.78	3.56	0.70	.91
ESM Study 4	4.42	0.88	.71	2.97	1.28	.82	2.11	0.62	.64
ESM-Event Study 1	4.76	0.86	.76	3.20	1.17	.81	2.28	0.62	.76
ESM-Event Study 2	4.85	0.90	.78	3.08	1.22	.79	2.19	0.63	.75
ESM-Event Study 3	4.95	1.00	.81	3.68	1.44	.85	2.37	0.55	.90

Note. Global reappraisal and suppression were assessed using Gross & John's (2003) ERQ, rated on 1 to 7 scale. Global rumination was assessed with the brooding subscale of Treynor et al.'s (2003) version of the RRS rated on 1 to 4 scale in all studies except Daily Diary Study 1 and ESM Study 3, in which rumination was assessed with the rumination subscale of Trapnell and Campbell's (1999) rumination-reflection questionnaire (with ratings from 1 to 5).

Table S5

Descriptive Statistics for Daily Self-Report Measures of Emotion Regulation

	Reappraisal							Suppression							Rumination						
	M	SD_W	SD_B	*ICC*	items	α_W	α_B	*M*	SD_W	SD_B	*ICC*	items	α_W	α_B	*M*	SD_W	SD_B	*ICC*	items	α_W	α_B
Diary Study 1	2.70	1.62	1.07	.30	1	—	—	3.35	1.84	1.11	.27	1	—	—	3.14	1.65	1.18	.34	1	—	—
Diary Study 2	3.60	0.95	1.28	.64	3	.79	.97	2.99	0.93	1.20	.62	3	.70	.93	3.53	1.18	1.21	.51	1	.85	.98
ESM Study 1	40.30	19.31	21.81	.56	2	.59	.99	38.55	24.64	22.76	.46	1	—	—	36.70	23.26	21.82	.47	1	—	—
ESM Study 2	15.23	14.40	10.74	.36	1	—	—	20.12	17.62	17.32	.49	1	—	—	24.81	16.33	14.02	.42	2	.40	.81
ESM Study 3	2.11	0.93	0.89	.48	1	—	—	2.47	1.17	1.00	.42	1	—	—	2.35	0.89	0.84	.47	3	.74	.98
ESM Study 4	18.27	15.29	11.68	.37	1	—	—	23.94	18.92	15.65	.41	1	—	—	27.29	20.10	17.04	.42	1	—	—
ESM-Event Study 1	0.54	0.93	0.79	.42	1	—	—	0.61	0.92	0.93	.50	1	—	—	0.84	1.24	0.93	.36	1	—	—
ESM-Event Study 2	33.65	28.63	16.68	.25	1	—	—	30.97	27.37	18.04	.30	1	—	—	28.07	28.01	13.97	.20	1	—	—
ESM-Event Study 3	41.29	19.26	20.66	.54	2	.69	.99	36.78	21.58	18.57	.43	2	.71	.99	39.65	20.84	18.83	.45	2	.75	.99

Note. See Table S2 for response scales used to measure emotion-regulation strategies in each study. Multilevel Cronbach's alphas were estimated following Geldhof et al. (2014).

Table S6

Descriptive Statistics for Daily Self-Report Measures of Negative and Positive Affect

	Negative Affect							Positive Affect						
	M	SD_W	SD_B	*ICC*	Items	α_W	α_B	*M*	SD_W	SD_B	*ICC*	Items	α_W	α_B
ESM Study 1	22.15	14.24	13.54	.47	3	.62	.89	63.11	15.54	13.35	.42	3	0.72	.93
ESM Study 2	14.32	10.41	8.38	.39	5	.72	.93	56.87	16.83	9.82	.25	3	0.73	.90
ESM Study 3	2.10	0.76	0.78	.51	4	.74	.95	4.07	0.97	0.65	.30	2	0.62	.91
ESM Study 4	15.65	10.99	10.80	.49	4	.74	.92	57.27	17.91	13.18	.35	2	.71	.90
ESM-Event Study 1	27.58	14.14	18.20	.62	6	.85	.96	43.24	17.73	23.25	.63	4	.91	.98
ESM-Event Study 2	15.99	13.95	9.21	.30	3	.62	.83	62.36	18.67	11.04	.26	2	.72	.91
ESM-Event Study 3	39.38	23.30	14.28	.27	1	—	—	2.91	3.83	2.89	.36	1	—	—

Note. Multilevel Cronbach's alphas were estimated following Geldhof et al. (2014). See Table S3 for response scales used to measure positive and negative affect in each study.

Supplemental Analyses

Within-Person Variability as Moderator of Selection Correspondence. Table S7 contains results of models testing whether selection correspondence was moderated by individual differences in within-person variability in daily emotion regulation. In each model, global self-reports of an emotion regulation strategy were simultaneously regressed onto the mean, within-person variance (estimated as a latent residual variance), and latent mean*variability interaction of daily self-reports for the same regulation strategy. Meta-analyses showed no reliable evidence across studies that within-person variability in daily emotion regulation moderated selection correspondence.

Table S7

*Standardized Regression Coefficients for Mean, Within-Person Variability and the Mean*Variability Interaction of Daily Self-Reported Emotion Regulation Predicting Global Self-Reported Emotion Regulation*

	Daily Self-Reports					
	Mean		Within-Person Var		Mean * Var	
Global Self-Reports	*Est.*	95% CI	*Est.*	95% CI	*Est.*	95% CI
Reappraisal						
Diary Study 1 (*N* = 114)	**.29**	**.04 to .54**	-.28	-.67 to .12	.17	-.10 to .42
Diary Study 2 (*N* = 153)	**.18**	**.01 to .35**	.66	.41 to .83	**-.17**	**-.25 to -.08**
ESM Study 1 (*N* = 176)	.28	-.37 to .74	.02	-.20 to .21	-.02	-.11 to .10
ESM Study 2 (*N* = 200)	-.03	-.65 to .56	.17	-.03 to .35	.00	-.15 to .15
ESM Study 3 (*N* = 46)	.06	-.32 to .45	-.13	-.71 to .48	-.02	-.39 to .34
ESM Study 4 (*N* = 95)	-.12	-.77 to .69	-.08	-.34 to .21	.06	-.14 to .21
ESM-Event Study 1 (*N* = 101)	-.19	-.42 to .06	.13	-.15 to .38	-.31	-.70 to .05
ESM-Event Study 2 (*N* = 100)	.64	-.74 to .93	.12	-.18 to .29	-.06	-.09 to .07
ESM-Event Study 3 (*N* = 112)	.04	-.62 to .68	-.18	-.46 to .17	.07	-.08 to .18
Meta-Analysis[a] (*N* = 1097)	.14	-.04 to .33	.07	-.14 to .28	-.03	-.13 to 06
Suppression						
Diary Study 1 (*N* = 114)	.18	-.18 to .46	.18	-.24 to .55	-.04	-.22 to .17
Diary Study 2 (*N* = 153)	**.56**	**.39 to .71**	.00	-.29 to .27	-.01	-.16 to .15
ESM Study 1 (*N* = 176)	**.66**	**.25 to .86**	.06	-.13 to .20	-.06	-.12 to .04
ESM Study 2 (*N* = 200)	-.12	-.69 to .62	-.18	-.35 to .00	.08	-.08 to .19
ESM Study 3 (*N* = 46)	.28	-.04 to .60	-.34	-.83 to .27	.16	-.25 to .51
ESM Study 4 (*N* = 95)	.50	-.53 to .92	.05	-.17 to .26	-.09	-.25 to .22
ESM-Event Study 1 (*N* = 101)	-.21	-.51 to .09	.20	-.07 to .45	**.53**	**.03 to 1.03**
ESM-Event Study 2 (*N* = 100)	.51	-.51 to .94	-.07	-.30 to .14	-.04	-.14 to .15
ESM-Event Study 3 (*N* = 112)	**.71**	**.20 to .91**	.10	-.16 to .27	-.10	-.16 to .01
Meta-Analysis[a] (*N* = 1097)	**.40**	**.14 to .65**	.01	-.09 to .11	.05	-.09 to .19
Rumination						
Daily Diary Study 1 (*N* = 114)	.14	-.31 to .51	.17	-.32 to .58	.05	-.14 to .27
Daily Diary Study 2 (*N* = 153)	**.55**	**.40 to .69**	.04	-.40 to .45	.00	-.14 to .16
ESM Study 1 (*N* = 176)	**.73**	**.47 to .88**	**.14**	**.01 to .25**	-.08	-.12 to .01
ESM Study 2 (*N* = 200)	.22	-.54 to .77	.10	-.12 to .28	.03	-.07 to .14
ESM Study 3 (*N* = 46)	.31	-.11 to .66	-.60	-1.07 to .16	.27	-.07 to .53
ESM Study 4 (*N* = 95)	-.24	-.90 to .68	.05	-.17 to .29	.12	-.11 to .26
ESM-Event Study 1 (*N* = 101)	**.26**	**.02 to .49**	-.04	-.31 to .21	.06	-.20 to .33
ESM-Event Study 2 (*N* = 100)	-.23	-.90 to .74	.08	-.15 to .35	.06	-.07 to .13
ESM-Event Study 3 (*N* = 112)	**.77**	**.31 to .94**	.23	.00 to .39	-.10	-.15 to .00
Meta-Analysis[a] (*N* = 1097)	**.34**	**.04 to .64**	.03	-.12 to .18	.02	-.04 to .08

Note. Estimates in bold have 95% Bayesian credible intervals (CIs) that do not include zero.

[a] Meta-analytic correlations are Fisher *z*-transformed and values within the '95% CI' column are frequentist 95% confidence intervals

Average Within-Person Identification Slopes. Tables S8 and S9 contain estimates of average within-person NA and PA identification slopes. These estimates are taken from the same models as those reported in the manuscript (see Figure 1 for model diagram).

Table S8

Average Within-Person Negative Affect (NA) Identification Slopes

	NA Identification Slope ($NA_{t-1} \rightarrow ER_t$)					
	α_{NA}^{REAP}		α_{NA}^{SUPP}		α_{NA}^{RUM}	
Study	*Est.*	95% CI	*Est.*	95% CI	*Est.*	95% CI
ESM Study 1 (*N* = 176)	**.03**	**.02 to .04**	**.05**	**.03 to .06**	**.07**	**.06 to .09**
ESM Study 2 (*N* = 200)	**.07**	**.05 to .09**	**.07**	**.06 to .09**	**.12**	**.10 to .13**
ESM Study 3 (*N* = 46)	**.06**	**.01 to .10**	**.06**	**.01 to .11**	**.09**	**.04 to .15**
ESM Study 4 (*N* = 95)	**.08**	**.05 to .10**	**.07**	**.04 to .09**	**.15**	**.12 to .18**
ESM-Event Study 1 (*N* = 101)	**.10**	**.08 to .12**	**.10**	**.09 to .13**	**.17**	**.15 to .19**
ESM-Event Study 2 (*N* = 100)	**.04**	**.02 to .06**	.01	-.01 to .04	**.08**	**.06 to .10**
ESM-Event Study 3 (*N* = 112)	.00	-.03 to .03	.00	-.04 to .02	**.07**	**.04 to .10**
Meta-Analysis[a] (*N* = 830)	.05	-.02 to .12	.05	-.02 to .12	**.11**	**.04 to .18**

Note. CI = Bayesian credibility intervals; ER = emotion regulation strategy; NA = negative affect;

[a] Meta-analytic correlations are Fisher *z*-transformed and values within the '95% CI' column are frequentist confidence intervals

Table S9

Average Within-Person Positive Affect (PA) Identification Slopes

	PA Identification Slope ($PA_{t-1} \rightarrow ER_t$)					
	α_{PA}^{REAP}		α_{PA}^{SUPP}		α_{PA}^{RUM}	
Study	*Est.*	95% CI	*Est.*	95% CI	*Est.*	95% CI
ESM Study 1 (*N* = 176)	.00	-.01 to .01	**-.04**	**-.05 to -.02**	**-.04**	**-.05 to -.03**
ESM Study 2 (*N* = 200)	-.01	-.03 to .00	**-.07**	**-.08 to -.05**	**-.10**	**-.12 to -.08**
ESM Study 3 (*N* = 46)	.00	-.05 to .04	-.01	-.06 to .03	-.03	-.08 to .01
ESM Study 4 (*N* = 95)	**-.04**	**-.07 to -.01**	**-.06**	**-.08 to -.03**	-.12	-.15 to .10
ESM-Event Study 1 (*N* = 101)	**-.05**	**-.07 to -.03**	**-.06**	**-.08 to -.02**	**-.10**	**-.12 to -.07**
ESM-Event Study 2 (*N* = 100)	**-.04**	**-.06 to -.02**	**-.03**	**-.06 to -.01**	**-.09**	**-.11 to -.06**
ESM-Event Study 3 (*N* = 112)	.02	-.01 to .05	.02	-.01 to .05	**-.07**	**-.10 to -.04**
Meta-Analysis[a] (*N* = 830)	-.02	-.08 to .05	-.04	-.11 to .03	**-.08**	**-.15 to -.01**

Note. CI = Bayesian credibility intervals; ER = emotion regulation strategy; PA = positive affect;

[a] Meta-analytic correlations are Fisher *z*-transformed and values within the '95% CI' column are frequentist confidence intervals

Average Within-Person Implementation Slopes. Tables S10 and S11 contain estimates of average within-person NA and PA implementation slopes. These estimates are taken from the same models as those reported in the manuscript (see Figure 1 for model diagram).

Table S10

Average Within-Person Negative Affect (NA) Implementation Slopes

	NA Implementation Slope ($ER_t \rightarrow NA_t$)					
	γ_{REAP}^{NA}		γ_{SUPP}^{NA}		γ_{RUM}^{NA}	
Study	*Est.*	95% CI	*Est.*	95% CI	*Est.*	95% CI
ESM Study 1 (*N* = 176)	**-.07**	**-.08 to -.06**	**.08**	**.07 to .10**	**.18**	**.16 to .19**
ESM Study 2 (*N* = 200)	**.06**	**.04 to .09**	**.19**	**.14 to .20**	**.21**	**.20 to .24**
ESM Study 3 (*N* = 46)	-.01	-.07 to .04	**.09**	**.04 to .14**	**.36**	**.30 to .42**
ESM Study 4 (*N* = 95)	**.04**	**.01 to .07**	**.17**	**.14 to .21**	**.33**	**.30 to .36**
ESM-Event Study 1 (*N* = 101)	**-.09**	**-.12 to -.06**	.02	-.01 to .05	**.13**	**.11 to .16**
ESM-Event Study 2 (*N* = 100)	**.06**	**.04 to .09**	**.09**	**.06 to .12**	**.29**	**.26 to .32**
ESM-Event Study 3 (*N* = 112)	.00	-.03 to .04	**.08**	**.05 to .11**	**.32**	**.29 to .35**
Meta-Analysis[a] (*N* = 830)	.00	-.07 to .07	**.11**	**.04 to .18**	**.25**	**.18 to .32**

Note. CI = Bayesian credibility intervals; ER = emotion regulation strategy; NA = negative affect;
[a] Meta-analytic correlations are Fisher *z*-transformed and values within the '95% CI' column are frequentist confidence intervals

Table S11

Average Within-Person Positive Affect (PA) Implementation Slopes

	PA Implementation Slope ($ER_t \rightarrow PA_t$)					
	γ_{REAP}^{PA}		γ_{SUPP}^{PA}		γ_{RUM}^{PA}	
Study	*Est.*	95% CI	*Est.*	95% CI	*Est.*	95% CI
ESM Study 1 (*N* = 176)	**.14**	**.13 to .16**	**-.06**	**-.08 to -.05**	**-.12**	**-.14 to -.11**
ESM Study 2 (*N* = 200)	**.06**	**.04 to .09**	**-.08**	**-.10 to -.06**	**-.18**	**-.21 to -.16**
ESM Study 3 (*N* = 46)	**.08**	**.02 to .13**	**-.06**	**-.11 to -.01**	**-.19**	**-.25 to -.14**
ESM Study 4 (*N* = 95)	**.06**	**.03 to .10**	**-.10**	**-.13 to -.07**	**-.24**	**-.27 to -.21**
ESM-Event Study 1 (*N* = 101)	**.11**	**.08 to .14**	.01	-.02 to .04	**-.05**	**-.07 to -.03**
ESM-Event Study 2 (*N* = 100)	-.02	-.05 to .00	**-.08**	**-.11 to -.05**	**-.23**	**-.26 to -.20**
ESM-Event Study 3 (*N* = 112)	.05	.02 to .09	-.01	-.04 to .02	**-.20**	**-.24 to -.17**
Meta-Analysis[a] (*N* = 830)	**.07**	**.01 to .14**	-.06	-.13 to .01	**-.17**	**-.24 to -.11**

Note. CI = Bayesian credibility intervals; ER = emotion regulation strategy; PA = positive affect;
[a] Meta-analytic correlations are Fisher *z*-transformed and values within the '95% CI' column are frequentist confidence intervals

Unique Effects of Selection, NA Identification, and NA Implementation on Global Self-Reports. Table S12 contains estimates of selection, identification, and implementation correspondence from MSEM models, in which scores on each global emotion regulation measure were simultaneously regressed onto the selection, NA identification and NA implementation parameters modeled using daily self-reports of the corresponding regulation strategy.

Table S12

Standardized Regression Weights for Daily Strategy Selection, NA Identification, and NA Implementation Predicting Global Self-Reports of each Emotion-Regulation Strategy

	Simultaneous Predictors					
	Selection		Identification		Implementation	
	β^{REAP}		α_{NA}^{REAP}		γ_{REAP}^{NA}	
Outcome variable	*est.*	95% CI	*est.*	95% CI	*est.*	95% CI
Global Reappraisal						
ESM Study 1 (*N* = 176)	**.21**	**.03 to .40**	.09	-.17 to .34	-.05	-.30 to .20
ESM Study 2 (*N* = 200)	.01	-.16 to .18	.12	-.10 to .34	-.16	-.40 to .07
ESM Study 3 (*N* = 46)	.05	-.43 to .54	-.35	-.93 to .43	.12	-.46 to .68
ESM Study 4 (*N* = 95)	-.07	-.38 to .22	**.42**	**.07 to .74**	-.10	-.49 to .28
ESM-Event Study 1 (*N* = 101)	-.20	-.42 to .02	.20	-.04 to .44	.03	-.24 to .28
ESM-Event Study 2 (*N* = 100)	-.08	-.34 to .17	-.19	-.52 to .16	-.14	-.47 to .23
ESM-Event Study 3 (*N* = 112)	**.45**	**.14 to .79**	.27	-.12 to .63	.22	-.25 to .66
Meta-Analysis[a] (*N* = 830)	.06	-.11 to .23	.09	-.10 to .29	-.02	-.13 to .08
	β^{SUPP}		α_{NA}^{SUPP}		γ_{SUPP}^{NA}	
	est.	95% CI	*est.*	95% CI	*est.*	95% CI
Global Suppression						
ESM Study 1 (*N* = 176)	**.47**	**.30 to .63**	-.05	-.35 to .23	.04	-.26 to .33
ESM Study 2 (*N* = 200)	**.21**	**.06 to .37**	.00	-.21 to .20	.12	-.08 to .32
ESM Study 3 (*N* = 46)	.16	-.28 to .57	**-.59**	**-.98 to -.07**	-.02	-.50 to .44
ESM Study 4 (*N* = 95)	.20	-.04 to .45	-.23	-.55 to .12	-.13	-.42 to .16
ESM-Event Study 1 (*N* = 101)	.12	-.11 to .33	.13	-.13 to .37	.07	-.26 to .44
ESM-Event Study 2 (*N* = 100)	**.41**	**.11 to .70**	**-.47**	**-.82 to -.08**	.19	-.22 to .60
ESM-Event Study 3 (*N* = 112)	.23	-.01 to .45	.18	-.27 to .61	-.16	-.48 to .16
Meta-Analysis[a] (*N* = 830)	**.28**	**.16 to .39**	-.15	-.39 to .08	.02	-.07 to .12
	β^{RUM}		α_{NA}^{RUM}		γ_{RUM}^{NA}	
	est.	95% CI	*est.*	95% CI	*est.*	95% CI
Global Rumination						
ESM Study 1 (*N* = 176)	**.50**	**.36 to .63**	-.07	-.28 to .14	**.23**	**.03 to .44**
ESM Study 2 (*N* = 200)	**.46**	**.34 to .58**	-.02	-.20 to .16	.05	-.11 to .21
ESM Study 3 (*N* = 46)	.18	-.27 to .60	-.12	-.78 to .67	.45	-.06 to .87
ESM Study 4 (*N* = 95)	**.31**	**.07 to .54**	-.01	-.35 to .32	.12	-.17 to .40
ESM-Event Study 1 (*N* = 101)	**.29**	**.07 to .48**	-.19	-.42 to .05	.06	-.18 to .31
ESM-Event Study 2 (*N* = 100)	**.42**	**.18 to .65**	-.30	-.59 to .03	.08	-.22 to .36
ESM-Event Study 3 (*N* = 112)	**.28**	**.07 to .49**	-.16	-.49 to .21	.00	-.29 to .31
Meta-Analysis[a] (*N* = 830)	**.40**	**.30 to .49**	**-.11**	**-.20 to -.03**	**.12**	**.03 to .21**

Note. Shaded cells contain correlations representing identification correspondence for each emotion regulation strategy; Estimates in bold have 95% Bayesian credible intervals (CIs) that do not include zero.

[a] Meta-analytic correlations are Fisher *z*-transformed and values within the '95% CI' column are frequentist 95% confidence intervals

Unique Effects of Selection, PA Identification, and PA Implementation on Global Self-Reports. Table S13 contains estimates of selection, identification, and implementation correspondence from MSEM models, in which scores on each global emotion regulation measure were simultaneously regressed onto the selection, PA identification and PA implementation parameters modeled using daily self-reports of the corresponding regulation strategy.

Table S13

Standardized Regression Weights for Daily Strategy Selection, PA Identification, and PA Implementation Predicting Global Self-Reports of each Emotion-Regulation Strategy

	Daily Emotion Regulation Process					
	Selection		Identification		Implementation	
	β^{REAP}		α_{PA}^{REAP}		γ_{REAP}^{PA}	
Global Self-Reports	*est.*	95% CI	*est.*	95% CI	*est.*	95% CI
Reappraisal						
ESM Study 1 (*N* = 176)	**.26**	**.05 to .47**	**-.31**	**-.55 to -.06**	.12	-.17 to .38
ESM Study 2 (*N* = 200)	.06	-.09 to .22	-.03	-.29 to .24	-.16	-.41 to .11
ESM Study 3 (*N* = 46)	-.01	-.47 to .45	.01	-.61 to .64	-.20	-.75 to .46
ESM Study 4 (*N* = 95)	-.07	-.48 to .26	-.45	-.93 to .01	.44	-.15 to .98
ESM-Event Study 1 (*N* = 101)	**-.28**	**-.48 to -.06**	-.06	-.30 to .17	-.24	-.47 to .02
ESM-Event Study 2 (*N* = 100)	-.08	-.40 to .24	.09	-.30 to .47	.09	-.39 to .6
ESM-Event Study 3 (*N* = 112)	**.35**	**.15 to .56**	.10	-.21 to .4	-.05	-.34 to .23
Meta-Analysis[a] (*N* = 830)	.04	-.13 to .21	-.10	-.27 to .06	.01	-.18 to .19
	β^{SUPP}		α_{PA}^{SUPP}		γ_{SUPP}^{PA}	
	est.	95% CI	*est.*	95% CI	*est.*	95% CI
Suppression						
ESM Study 1 (*N* = 176)	**.53**	**.25 to .82**	.16	-.14 to .44	-.17	-.60 to .26
ESM Study 2 (*N* = 200)	**.27**	**.07 to .47**	.17	-.09 to .41	-.15	-.38 to .10
ESM Study 3 (*N* = 46)	.10	-.35 to .56	.53	-.01 to .97	.25	-.34 to .78
ESM Study 4 (*N* = 95)	**.34**	**.07 to .60**	.19	-.26 to .61	-.21	-.60 to .18
ESM-Event Study 1 (*N* = 101)	.12	-.10 to .35	.00	-.24 to .26	.07	-.25 to .37
ESM-Event Study 2 (*N* = 100)	**.39**	**.13 to .66**	.36	-.07 to .74	.06	-.26 to .38
ESM-Event Study 3 (*N* = 112)	.22	-.01 to .45	**.45**	**.07 to .76**	-.15	-.48 to .18
Meta-Analysis[a] (*N* = 830)	**.32**	**.18 to .44**	**.26**	**.13 to .41**	-.07	-.18 to .04
	β^{RUM}		α_{PA}^{RUM}		γ_{RUM}^{PA}	
	est.	95% CI	*est.*	95% CI	*est.*	95% CI
Rumination						
ESM Study 1 (*N* = 176)	**.57**	**.41 to .71**	.21	-.04 to .48	**-.37**	**-.64 to -.12**
ESM Study 2 (*N* = 200)	**.44**	**.29 to .58**	-.09	-.32 to .15	-.01	-.22 to .19
ESM Study 3 (*N* = 46)	.17	-.30 to .63	.34	-.32 to .86	.02	-.59 to .61
ESM Study 4 (*N* = 95)	**.30**	**.03 to .55**	-.24	-.66 to .25	-.02	-.35 to .33
ESM-Event Study 1 (*N* = 101)	**.30**	**.09 to .51**	.03	-.20 to .27	-.09	-.35 to .18
ESM-Event Study 2 (*N* = 100)	**.37**	**.14 to .58**	.07	-.25 to .40	-.06	-.36 to .23
ESM-Event Study 3 (*N* = 112)	**.28**	**.07 to .48**	.22	-.09 to .51	-.09	-.34 to .17
Meta-Analysis[a] (*N* = 830)	**.39**	**.27 to .51**	.07	-.07 to .21	-.10	-.22 to .01

Note. Shaded cells contain correlations representing identification correspondence for each emotion regulation strategy; Estimates in bold have 95% Bayesian credible intervals (CIs) that do not include zero.
[a] Meta-analytic correlations are Fisher *z*-transformed and values within the '95% CI' column are frequentist 95% confidence intervals

Variance and Heterogeneity Estimates for Main Meta-Analyses. Tables S14 to S18 contain variance and heterogeneity estimates for our main meta-analyses (i.e., those reported in Tables 2-6 in the main manuscript). Specifically, we report (i) τ^2, an estimate of total heterogeneity and its standard error; (ii) I^2, an estimate of total heterogeneity as a percentage of total variability; (iii) H^2, an estimate of total variability as a percentage of sampling variability; and (iv) Q, an inferential test of heterogeneity and its corresponding *p*-value. All variance and heterogeneity statistics were estimated using the *metafor* R-package (Viechtbauer, 2010).

Table S14

Heterogeneity statistics for selection correspondence meta-analyses (reported in Table 2)

		τ^2				*Heterogeneity Test*	
Global Strategy	Daily Strategy Selection	*Estimate*	*SE*	I^2	H^2	Q	*p* value
Reappraisal	Reappraisal	0.033	0.021	79.515	4.882	37.750	0.000
	Suppression	0.000	0.004	0.000	1.000	7.489	0.485
	Rumination	0.015	0.012	63.082	2.709	21.126	0.007
Suppression	Reappraisal	0.006	0.007	41.111	1.698	13.122	0.108
	Suppression	0.020	0.015	70.404	3.379	29.131	0.000
	Rumination	0.012	0.010	58.193	2.392	19.545	0.012
Rumination	Reappraisal	0.015	0.012	63.172	2.715	21.268	0.006
	Suppression	0.015	0.012	64.143	2.789	22.238	0.004
	Rumination	0.013	0.011	60.380	2.524	19.949	0.011

Table S15

Heterogeneity statistics for NA identification correspondence meta-analyses (reported in Table 3)

		τ^2				*Heterogeneity Test*	
Global strategy	Daily NA Identification slope	*Estimate*	*SE*	I^2	H^2	Q	*p* value
Reappraisal	Reappraisal	0.030	0.023	77.118	4.370	22.731	0.001
	Suppression	0.014	0.013	60.637	2.540	15.295	0.018
	Rumination	0.000	0.005	0.000	1.000	3.955	0.683
Suppression	Reappraisal	0.000	0.005	0.000	1.000	4.694	0.584
	Suppression	0.023	0.019	72.452	3.630	19.360	0.004
	Rumination	0.000	0.005	0.000	1.000	4.369	0.627
Rumination	Reappraisal	0.007	0.009	44.712	1.809	11.795	0.067
	Suppression	0.000	0.005	0.000	1.000	4.550	0.603
	Rumination	0.000	0.005	0.000	1.000	4.082	0.666

Table S16

Heterogeneity statistics for PA identification correspondence meta-analyses (reported in Table 4)

Global strategy	Daily PA Identification slope	τ^2				Heterogeneity Test	
		Estimate	*SE*	I^2	H^2	Q	*p* value
Reappraisal	Reappraisal	0.005	0.008	36.038	1.563	9.350	0.155
	Suppression	0.010	0.011	52.278	2.095	12.611	0.050
	Rumination	0.000	0.005	0.002	1.000	6.689	0.351
Suppression	Reappraisal	0.016	0.015	64.585	2.824	16.101	0.013
	Suppression	0.011	0.012	55.576	2.251	13.773	0.032
	Rumination	0.012	0.012	57.847	2.372	13.895	0.031
Rumination	Reappraisal	0.003	0.007	27.159	1.373	8.489	0.204
	Suppression	0.021	0.018	70.380	3.376	21.710	0.001
	Rumination	0.016	0.015	64.869	2.847	17.843	0.007

Table S17

Heterogeneity statistics for NA implementation correspondence meta-analyses (reported in Table 5)

Global strategy	Daily NA Implementation slope	τ^2				Heterogeneity Test	
		Estimate	*SE*	I^2	H^2	Q	*p* value
Reappraisal	Reappraisal	0.000	0.005	0.000	1.000	3.241	0.778
	Suppression	0.009	0.010	49.799	1.992	11.790	0.067
	Rumination	0.008	0.010	47.245	1.896	11.172	0.083
Suppression	Reappraisal	0.025	0.020	73.483	3.771	22.070	0.001
	Suppression	0.008	0.010	46.671	1.875	11.077	0.086
	Rumination	0.001	0.005	8.887	1.098	6.241	0.397
Rumination	Reappraisal	0.016	0.015	64.725	2.835	17.544	0.007
	Suppression	0.002	0.006	19.113	1.236	6.513	0.368
	Rumination	0.000	0.005	0.563	1.006	7.280	0.296

Table S18

Heterogeneity statistics for PA implementation correspondence meta-analyses (reported in Table 6)

Global strategy	Daily PA Implementation slope	τ^2				Heterogeneity Test	
		Estimate	*SE*	I^2	H^2	Q	*p* value
Reappraisal	Reappraisal	0.004	0.008	33.308	1.499	9.424	0.151
	Suppression	0.009	0.010	49.141	1.966	11.524	0.073
	Rumination	0.000	0.005	2.897	1.030	6.189	0.402
Suppression	Reappraisal	0.011	0.012	54.734	2.209	13.355	0.038
	Suppression	0.009	0.010	49.436	1.978	12.016	0.062
	Rumination	0.014	0.013	60.924	2.559	14.903	0.021
Rumination	Reappraisal	0.033	0.025	78.905	4.740	33.186	0.000
	Suppression	0.008	0.010	47.228	1.895	11.905	0.064
	Rumination	0.000	0.005	0.000	1.000	3.652	0.724

Statistical Power for Meta-Analyses. We calculated post-hoc power for our main random effects meta-analyses following Valentine et al. (2010), using an adapted R-script made available by Quintana (2017). This revealed that our meta-analyses including all studies (k = 9) had 80% power to detect effects as small as r = .07, assuming small between-study heterogeneity; r = .08, assuming moderate between-study heterogeneity; and r = .12, assuming large between-study heterogeneity (see Valentine et al., 2010). For meta-analyses including only the ESM and ESM-Event studies (k = 7), we had 80% power to detect effects as small as r = .08, assuming small between-study heterogeneity; r = .10 assuming moderate between-study heterogeneity; and r = .14, assuming large between-study heterogeneity.

Given that between-study heterogeneity in effect sizes was large in some cases, we calculated the observed power for the two largest non-significant meta-analytic effects obtained in our main analyses (i.e., those reported in the main text, rather than the supplemental materials). These were (i) the association between global suppression and the NA identification slope for state suppression (r_{meta} = –.11, 95% CI [-.24 to .03]), for which observed power was 63%; and (ii) the association between global rumination and the PA implementation slope for state reappraisal (r_{meta} = .14, 95% CI [–.01 to .30]), for which our observed power was 77%. Thus, our meta-analyses were underpowered to detect some potentially significant effects due to high levels of between-study heterogeneity.

Finally, we calculated the observed power for all meta-analytic effects in our main analyses that differed significantly from zero, which we report in Table S19 (below). We report absolute meta-analytic effect sizes, r, and I^2 estimates obtained using the *metafor* R-package (Viechtbauer, 2010). These meta-analytic effect sizes were converted to Cohen's ds using the *effectsize* R-package (Ben-Shachar et al., 2020). Finally, we calculated the observed power for each meta-analysis by adapting Quintana's (2017) R-script. As shown in Table S19, below, observed power ranged between .90 and 1 for most (15 out of 18) meta-analytic effects.

Table S19

Post-Hoc (observed) Power for all Statistically Significant Meta-Analyses Reported in Main Manuscript

Source Table	Effect	|*r*|	I^2	Cohen's *d*	*k*	Average *N*	Power
Table 5	Global Reappraisal with γ_{REAP}^{NA}	.07	0.00%	0.14	7	118.57	.83
Table 4	Global Suppression with α_{PA}^{SUPP}	.11	55.6%	0.23	7	118.57	.87
Table 2	Global Reappraisal with β^{REAP}	.14	79.5%	0.29	9	121.89	.87
Table 3	Global Rumination with α_{NA}^{SUPP}	.08	0.00%	0.16	7	118.57	.90
Table 3	Global Suppression with α_{NA}^{RUM}	.08	0.00%	0.16	7	118.57	.92
Table 4	Global Reappraisal with α_{PA}^{RUM}	.09	0.00%	0.17	7	118.57	.94
Table 5	Global Rumination with γ_{REAP}^{NA}	.14	64.7%	0.29	7	118.57	.94
Table 3	Global Rumination with α_{NA}^{RUM}	.09	0.0%	0.18	7	118.57	.96
Table 4	Global Suppression with α_{PA}^{REAP}	.15	64.6%	0.30	7	118.57	.96
Table 2	Global Suppression with β^{RUM}	.13	58.1%	0.26	9	121.89	.97
Table 2	Global Rumination with β^{REAP}	.13	63.2%	0.27	9	121.89	.97
Table 5	Global Rumination with γ_{RUM}^{NA}	.10	1.00%	0.20	7	118.57	.98
Table 3	Global Suppression with α_{NA}^{REAP}	.15	0.00%	0.30	7	118.57	~1.00
Table 4	Global Rumination with α_{PA}^{REAP}	.17	27.2%	0.35	7	118.57	~1.00
Table 3	Global Rumination with α_{NA}^{REAP}	.19	44.0%	0.39	7	118.57	~1.00
Table 2	Global Rumination with β^{SUPP}	.25	64.1%	0.52	9	121.89	~1.00
Table 2	Global Suppression with β^{SUPP}	.30	70.4%	0.64	9	121.89	~1.00
Table 2	Global Rumination with β^{RUM}	.40	60.4%	0.86	9	121.89	~1.00

Note. |*r*| = absolute value of meta-analytic correlation. I^2 = proportion of total variation in effect sizes attributable to between-study variance; Cohen's *d* = meta-analytic correlation converted to Cohen's *d*; *k* = number of effects in meta-analysis; Average *N* = average sample size per study in meta-analysis.

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