Flexibility or Instability? Emotion Goal Dynamics and Mental Health

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Emotion goals (i.e., what people want or do not want to feel) have important implications for emotional and mental health because they can shape whether, when, and how people regulate their emotions. Although research has shown that emotion goals vary across individuals and situations, we know relatively little about the dynamic changes in emotion goals in daily life and their potential implications. Given the dynamic features of emotions and emotion regulation, emotion goals may also fluctuate across time and their fluctuations may be critically linked to mental health. This research assessed the everyday dynamics of emotion goals, in particular, variability and inertia, and their associations with mental health. In two studies ($N = 56$ in Study 1 and $N = 173$ in Study 2), we included different indices of mental health and used Ecological Momentary Assessments to measure both pleasant and unpleasant emotion goals and experiences at a momentary level in daily life. We found that variability in unpleasant, but not pleasant, emotion goals was linked to better mental health outcomes, even after controlling for the mean levels of emotion goals, and the variability and mean levels of the corresponding emotional experiences. Emotion goal inertia was unrelated to mental health. These findings suggest that emotion goal variability is an important novel factor that may contribute to or reflect mental health.

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Successful goal pursuit requires balancing persistent striving, on the one hand, and flexible goal adjustment, on the other hand (e.g., Brandstätter & Bernecker, 2022; Gollwitzer et al., 2008). This basic principle applies to all goal pursuits, including the pursuit of emotion goals. Emotion regulation is the process by which we pursue emotion goals, which are desired or undesired emotions (Tamir, 2016). Emotion goals are critical because they can determine whether people try to influence emotions, the direction in which they try to do so, and how they subsequently feel (Tamir, 2021). Similar to goal pursuit in other domains, successful emotion regulation should require balancing persistent striving of emotion goals, on the one hand, and flexibly adjusting emotion goals according to contextual demands, on the other hand. Yet, we know relatively little about dynamic changes in emotion goals in daily life. Therefore, in the present investigation, we assessed dynamic changes in emotion goals in daily life and their potential links to mental health.

Emotion Goals

Goals represent desired (or undesired) outcomes (Austin & Vancouver, 1996; Fishbach & Ferguson, 2007). Emotion goals represent desired (or undesired) emotional states (Tamir, 2016, 2021). Although emotion goals can refer to desired emotional experiences or expressions (Greenaway & Kalokerinos, 2019), here we refer specifically to desired emotional experiences. An emotion goal can target a pleasant or an unpleasant emotion, with varying levels of intensity (Tamir & Gutentag, 2017). For example, a person may want to be very happy at a friend's birthday party, but want to experience a moderate level of sadness at an acquaintance's funeral. People may set emotion goals for hedonic or instrumental reasons (Tamir, 2016). For example, people may seek to avoid anger as it feels bad (i.e., hedonic reasons) or to seek anger when it motivates them to fight for social justice (i.e., instrumental reasons). Because

emotion goals can be influenced by instrumental reasons, they often vary by context. Anger, for instance, may be less instrumental when we need to collaborate with others, but more instrumental when we need to confront others (e.g., Kim et al., 2015; Tamir & Ford, 2012).

Emotion goals play a critical role in the activation of emotion regulation, and therefore, can potentially shape the entire process and its outcomes (Tamir, 2021). Research shows that emotion goals influence the strategies people choose to regulate (Millgram, Joormann, et al., 2019; Millgram, Sheppes, et al., 2019) and the emotional outcomes of emotion regulation. For example, participants who were instructed to try to increase sadness or happiness were more likely to choose emotion regulation strategies that increase emotional intensity (e.g., rumination), whereas those who were instructed to try to decrease sadness or happiness were more likely to choose emotion regulation strategies that decrease emotional intensity (e.g., distraction; Millgram, Joormann, et al., 2019; Millgram, Sheppes, et al., 2019). Additionally, merely activating an emotion goal (i.e., rendering anger more desirable), without informing participants how to pursue it (i.e., which regulatory strategy to use), can trigger successful emotional changes (i.e., higher level of experienced anger; Tamir & Ford, 2012). Moreover, by influencing the process and outcomes of emotion regulation, emotion goals can also inform mental health and well-being. For example, people who are able to attain their emotion goals (i.e., to feel the emotions they desire) report greater well-being and lower depressive symptoms (e.g., Ford et al., 2018; Tamir et al., 2017).

Emotion Goals and Mental Health

Which emotion goals should people pursue? Pursuing more pleasant emotion goals and less unpleasant emotion goals may be beneficial. For instance, the pursuit of more intense unpleasant emotionss and less intense pleasant emotions have been linked to depression (e.g., Millgram et al., 2015; Mizrahi Lakan, Millgram, & Tamir, 2023). Thus, a desire for more unpleasant emotions or less pleasant emotions, in general, is related to worse mental health. At the same time, pursuing pleasant emotions is not always linked to better outcomes. For instance, people who pursue pleasant emotion goals to an extreme degree (i.e., wanting to feel maximum levels of happiness) are more likely to have worse mental health (e.g., greater depressive symptoms; Mauss et al., 2011). Similarly, pursuing unpleasant emotion goals is not always harmful (e.g., Kim et al., 2015; López-Pérez & McCulloch, 2021). For example, people who prefer to experience greater anger in confrontation (vs. collaboration) contexts report higher levels of well-being (Kim et al., 2015). Thus, both general and contextualized emotion goals can carry important implications for mental health.

The degree to which pursuing certain emotion goals is beneficial varies across individuals and contexts. For example, while there is a robust association between unpleasant experiences and lower psychological well-being (e.g., Kuppens et al., 2008), this association is weaker among people who value unpleasant emotions to a greater extent (e.g., Luong et al., 2016; Miyamoto et al., 2013). Whether or not an emotion goal is healthy to pursue might also depend on its instrumental value in a specific context. For instance, anger may help extract concessions from partners in a negotiation that involves confrontation (e.g., Sinaceur & Tiedens, 2006), but not a negotiation that requires collaboration. Thus, although emotion goals can have critical implications for mental health, such implications may depend on whether people can flexibly pursue the right emotion goal in the right situation at the right time. Together, these findings stress the importance of understanding how emotion goals change across situations and time, and the implications of those changes.

Changes in Emotion Goals

People adapt to the environment that they live in. Goals, therefore, are set in temporal contexts as people move through life (e.g., Giasson et al., 2019). For example, doctoral students' goals for attaining an academic career change over the course of graduate training (Roach & Sauermann, 2017). Similar to goals in other domains, emotion goals are also context-sensitive and can change across time and across situations. For example, in daily life, people generally do not want to experience unpleasant emotions, but in certain circumstances, they do (e.g., Ford et al., 2019; Kalokerinos et al., 2017; Kim et al., 2015). Therefore, emotion goals change dynamically over time.

Endorsing context-sensitive emotion goals has been linked to better mental health. For instance, people who wanted to feel happy when they were in a context that required collaboration, and people who wanted to feel angry when they were in a context that required confrontation, reported greater well-being (Tamir & Ford, 2012). These findings have been replicated in a daily dairy study, showing that those who are more capable of pursuing context-sensitive emotion goals in daily life had higher well-being (Kim et al., 2015). These findings suggest that endorsing unpleasant emotion goals in a way that matches changing contextual demands can be beneficial to mental health. Temporal changes or fluctuations in emotion goals might be associated with better mental health because they could reflect sensitivity to changing contexts—a hallmark of emotional flexibility (e.g., Kashdan & Rottenberg, 2010).

A different perspective suggests that excessive changes in emotion goals might be harmful and associated with worse mental health. According to Kohut's self-theory (1971, 1977), a stable structure of goals is fundamental to orient individuals during times of transition. Individuals who constantly jump from one goal to another might be less likely to be committed to or persist in their goal pursuit, and therefore are less likely to achieve their goals (e.g., Gollwitzer et al., 2008). In contrast to having stable and clear goals, goal instability has been linked to difficulties in setting goals, keeping direction, initiating action, and maintaining the drive to complete goals (e.g., Bertoch et al., 2014; Robbins & Patton, 1985). For example, people who display goal instability are less capable of adjusting to life transitions (e.g., career changes; Robbins et al., 1990). To date, goal instability has been tested primarily with respect to long-term goals, whereas emotion goals can vary more frequently from moment to moment. Nonetheless, stability in such goals can be equally informative, if it is related to the quality or outcome of goal pursuit. Specifically, frequent changes in emotion goals might be maladaptive if it is linked to less effective emotion regulation or worse emotional outcomes.

There has been a growing recognition of the importance of studying emotion regulation in daily life and its links to mental health. For instance, Liu and colleagues (2023) have shown that depressed individuals attempted to regulate their emotions more often than nondepressed individuals in daily life, potentially due to more intense experiences of unpleasant emotions and/or less intense experiences of pleasant emotions. Such findings demonstrate that patterns of

daily emotion regulation can be linked to downstream psychological consequences. Less research to date has examined emotion goals. To our knowledge, no studies to date have examined dynamic changes in emotion goals (e.g., their variability, instability, and inertia) in daily life and their potential links to mental health outcomes.

The existing literature suggests that it is crucial to understand the dynamics of psychological constructs, in addition to their mean levels. For example, some evidence shows that greater variability in pleasant emotions is linked to worse mental health, above and beyond the mean levels of pleasant emotions (Gruber et al., 2013). That is, regardless of how pleasant people feel on average, the dynamic pattern of the changes in their pleasant emotions informs the prediction of mental health. Similarly, regardless of how pleasant or unpleasant people want to feel, the dynamic pattern of the changes in people's emotion goals could inform the prediction of mental health. Therefore, it is crucial to understand the nature of emotion goals in daily life—whether they remain relatively stable or constantly change—and whether such stability or variability is beneficial. To this end, we tested whether and how emotion goals change dynamically in daily life, and how these changes are linked to mental health.

Indices of Temporal Dynamics

Although little research has assessed the dynamics of emotion goals, there is a body of work on the dynamics of emotional experiences. To assess the dynamic changes in emotional experiences, researchers have developed different measures to capture the patterns of moment-to-moment changes in emotional experiences (for a review, see Dejonckheere et al., 2019). Among those, the indices that are most commonly used are variability (and/or instability) and inertia (e.g., Houben et al., 2015; Nelson et al., 2020). These indices are also widely linked to critical psychological and mental health outcomes and psychopathology (e.g., Houben et al., 2015; Sperry et al., 2020). Thus, building upon the existing work on the dynamics of emotional experiences, we examined the variability (and/or instability) and inertia of emotion goals to understand their temporal dynamics, and examine whether these dynamics uniquely contribute to the prediction of mental health above and beyond any contribution of mean levels of emotion goals, and mean levels and dynamics of emotional experiences.

Variability

Emotional fluctuation over time can be assessed by emotional variability, and a closely related construct in the literature on emotional dynamics is instability (e.g., Gruber et al., 2013; Nelson et al., 2020; Thompson et al., 2021). Variability captures the general dispersion or the range of a variable across time (e.g., an emotion goal or an emotional experience, Eid & Diener, 1999; Gruber et al., 2013). Variability in an emotional experience is often calculated as the within-person standard deviation (*SD*) across a sampling period. High variability in happiness, for example, indicates that the level of happiness a person feels often involves extreme lows and highs, and shows large deviations from the average level of happiness this person feels. An individual characterized by high variability in an emotion goal indicates that the degree to which a person desires to experience an emotion (e.g., how happy one wants to be) is likely to reach extreme levels across time or different situations.

Instability captures the moment-to-moment fluctuations of a variable over time (Trull et al., 2008), rather than the entire range of the variable. Emotional instability is often estimated as the mean squared successive difference (MSSD) between two successive emotional experiences or a related metric represents the extent to which an emotion fluctuates from one moment to the next (e.g., Ebner-Priemer et al., 2009; Jahng et al., 2008). A person who displays high variability in an emotion goal is likely to display extensive shifts from one moment to the next, or from one situation to another. Despite the conceptual distinction between variability and instability, empirically, *SD* and MSSD are often highly correlated (e.g., $r > .8$ in Lamers et al., 2018), and both have been used as a measure of variability.

Inertia

Inertia, or temporal dependency, captures the moment-to-moment predictability of a variable (e.g., Koval et al., 2016; Kuppens et al., 2010; Suls & Martin, 2005). Researchers have measured the inertia of an emotional experience by estimating its autocorrelation or by fitting an autoregressive (multilevel) model (e.g., Koval et al., 2016). High emotional inertia indicates that the intensity of one's emotional experience at a given time point can be predicted by their emotional experience at the previous time point. An individual with high levels of inertia in emotion goals is likely to have the same emotion goal across time or different situations.

The Present Investigation

This research tested the associations between emotion goal dynamics and mental health. To this end, we used datasets from two separate studies, collected in different countries. Both studies involved diverse measures of mental health and used ecological momentary assessment (EMA) to measure emotion goals and emotional experiences at a momentary level, which allows for the direct assessment of temporal dynamics. We examined the dynamics (e.g., variability and inertia) of both pleasant and unpleasant emotion goals and whether they were linked to indices of mental health. Prior research shows that dynamic measures sometimes do not add much to the prediction of psychological well-being above and beyond the means (Dejonckheere et al., 2019). Therefore, to strengthen our findings, we conducted a set of conservative analyses and examined whether the association between emotion goal dynamics and mental health, if it exists, holds above and beyond the potential implications of mean levels of emotion goals. Moreover, to assess if emotion goal dynamics has unique predictive value, we also examined if emotion goal dynamics predict mental health, even when controlling for mean levels and dynamics of the corresponding emotional experiences. We tested whether greater variability and lower inertia in pleasant or unpleasant emotion goals would be linked to better or worse mental health.

Transparency and Openness

Both studies were collected as parts of larger projects (see below for detailed descriptions). All research materials, data, and analysis codes are available at https://osf.io/9ygsa/?view_only=326d4b0d937246b7958b27f45bd576d0. We report how we determined our sample sizes, data exclusions, and all measures relevant to the research questions. Although the current research questions were not preregistered, the method in Study 1 was preregistered, as specified below.

The ethics committee of the Hebrew University of Jerusalem approved Study 1 and the ethics committee of the University of Melbourne approved Study 2.

Study 1

Method

Study 1 used data from a larger preregistered project examining everyday emotion regulation among nondepressed and depressed individuals. Below, we focus on methodological details relevant to the current investigation. A full list of all constructs measured and the link to the preregistration can be found in Mizrahi Lakan, Hu, et al. (2023).

Participants and Procedure

The final sample consisted of 56 participants (41 women and 15 men; $M_{age} = 24.75$, $SD_{age} = 2.94$). Participants were Jewish Israelis, recruited from the participant pool at the Hebrew University of Jerusalem. In addition to the sample reported here, the original study included a sample of clinically depressed individuals. Given that the current investigation targeted associations between emotion goal dynamics and mental health among healthy individuals, we excluded all participants diagnosed with major depressive disorder. Six additional healthy participants were excluded from further analyses as they failed to pass attention checks. The original sample size was determined to attain sufficient power to test research questions in the larger research project (see Mizrahi Lakan, Hu, et al., 2023). Based on a post hoc power analysis, $N = 56$ allowed us to detect a medium association ($r = .36$, with $\alpha = .05$) with ~80% power.

The parts of the larger project of Study 1 that were relevant to the current investigation include a baseline survey and an EMA portion. Participants received up to 240 Shekels (~$68 USD) if they completed the baseline survey and at least 80% of the EMA surveys. At baseline, participants provided their demographic information and completed measures of mental health. Participants who completed the baseline survey were subsequently invited to participate in a 10-day EMA study. The EMA surveys were sent to participants' mobile phones via text message four times per day, approximately every four hours. In each EMA survey, participants rated the extent to which they experienced four discrete emotions and the desirability of each emotion (i.e., emotion goals). Our target sample completed a total number of 2,054 completed EMA surveys. EMA surveys that were completed in less than 60 s were excluded from further analyses (~1%), resulting in 2,034 EMA surveys.

Measures

Table 1 summarizes the list of measures included in the present investigation. Each EMA survey involved measures of pleasant and unpleasant emotion goals and emotional experiences. Measures of mental health were assessed at baseline (prior to the EMA study).

Emotion Goals. Participants indicated the extent to which they wanted to experience sadness, happiness, anxiety, and calmness, in a fixed order, in each EMA survey. These four discrete emotions were selected because they represent each quadrant of the circumplex

Table 1
Overview of Measures in Studies 1 and 2

Variable	Study 1	Study 2
EMA measures		
Emotional states	Pleasant states	Pleasant states
	• Happy	• Happy
	• Calm	• Calm
		• Hopeful
	Unpleasant states	Unpleasant states
	• Sad	• Sad
	• Anxious	• Anxious
		• Stressed
		• Angry
Emotion goal sample item	"In the last two hours, to what extent did you want to feel [happy]?"	"Right now, how [happy] do you want to feel?"
Emotion sample item	"To what extent do you feel [happy] now?"	"Right now, how [happy] do you feel?"
Response scale	• 0 = *not at all*	• 0 = *not at all*
	• 9 = *very much*	• 100 = *very much*
Mental health measures		
Depressive symptoms	10-item CES-D	20-item CES-D
Response scale	• 1 = *rarely or none of the time*	• 1 = *rarely or none of the time (less than 1 day)*
	• 4 = *most or all of the time*	• 4 = *most or all of the time (5–7 days)*
Clinical symptoms	Global Severity Index of SCL-90-R	—
Response scale	• 1 = *not at all*	
	• 5 = *very much*	
Stress	—	The Perceived Stress Scale
Response scale		• 1 = *never*
		• 5 = *very often*
Anxiety symptoms	—	The Generalized Anxiety Disorder questionnaire
Response scale		• 1 = *not at all*
		• 4 = *nearly every day*

Note. CES-D = Center for Epidemiologic Studies Depression Scale; EMA = ecological momentary assessment; CES-D = Center for Epidemiologic Studies Depression Scale; SCL-90-R = Symptom Checklist-90-Revised.

model of affect (Russell & Barrett, 1999). Ratings on pleasant items were averaged to assess pleasant emotion goals ($\omega_{between}$ = .94, ω_{within} = .64) and ratings of unpleasant items were averaged to assess unpleasant emotion goals ($\omega_{between}$ = .52, ω_{within} = .38), respectively.

Emotional Experiences. To measure emotional experiences, in each EMA survey, participants rated the extent to which they felt each emotional state. Similarly, we created composite measures for pleasant emotions ($\omega_{between}$ = .78, ω_{within} = .67) and unpleasant emotions ($\omega_{between}$ = .65, ω_{within} = .52) by averaging the same-valenced items at each EMA assessment, respectively.

Dynamic Measures. Using EMA data, we assessed the dynamics of emotion goals by examining their variability and inertia.

Variability. Two indices were computed to examine emotion goal variability: within-person SD (Eid & Diener, 1999) and the square root of the mean squared successive difference (RMSSD, Jahng et al., 2008). First, we computed the within-person SD of unpleasant emotion (UE) goals and separately, of pleasant emotion (PE) goals, across each participant's surveys, creating one $SD_{UE\ goal}$ score and one $SD_{PE\ goal}$ score per participant. A higher variability score in unpleasant (or pleasant) emotion goals indicates that the levels of unpleasant (or pleasant) emotions the participant wanted to experience showed more extreme variations over time.[1] Next, we computed the RMSSD for unpleasant emotion goals and pleasant emotion goals separately, for each person. A higher instability score in unpleasant (or pleasant) emotion goals suggests that a person's desired levels of unpleasant (or pleasant) emotions shifted more extensively from moment to moment.

Inertia. We assessed inertia in emotion goals by using the autoregressive slope between a participant's emotion goal at one assessment in time and a subsequent assessment in time in a multilevel model (e.g., Koval & Kuppens, 2012). The autoregressive slope captures the degree to which emotion goals persist across time (i.e., greater inertia). We ran separate multilevel models for unpleasant emotion goals and pleasant emotion goals. A more positive autoregressive slope in unpleasant (or pleasant) emotion goals reflects slower change and greater moment-to-moment persistence of unpleasant (or pleasant) emotion goals.

Mental Health. To assess mental health, we included two measures.

Clinical Symptoms. We included the Global Severity Index of the SCL-90-R (Derogatis, 1996) to capture clinical symptoms. In this measure, participants indicated the extent to which they were bothered by various psychiatric symptoms (e.g., trouble falling asleep) on a 1 (*not at all*) to 5 (*extremely*) scale. Each participant's mean scores on this measure (averaging across all 90 items) were calculated and served as an index of general psychological distress (α = .95; M = 1.21, SD = 0.22; e.g., Marshall et al., 2010).

Depressive Symptoms. We included the 10-item version of the Center of Epidemiological Studies Depression Scale (CES-D; Andresen et al., 1994). In this measure, participants indicated the frequency of depressive symptoms (e.g., I felt depressed) over the past week on a scale from 1 (*rarely or none of the time*) to 4 (*most or all of the time*). Composite scores were computed for this measure (α = .73; M = 1.54, SD = 0.35).

The two measures of mental health were strongly correlated, r = .67, p < .001. To simplify the presentation of results and also to reduce Type 1 error, we z-transformed scores on each measure and combined them (α = .75). We then used their composite score as an index of mental health (lower scores reflect better mental

health). The pattern of results was similar when including clinical and depressive symptoms as separate measures (see the online supplemental materials).

Data Analyses

We tested potential associations between the dynamics of emotion goals and mental health. All analyses were conducted in R (Version 4.1.1).

Between-Person Analyses

Because the two measures of variability are assessed at the person level, we conducted between-person analyses by using multiple regression models. To strengthen our findings, we used a stepwise approach for model building. First, because both variability indices are computed measures and dependent on the mean levels of emotion goals (e.g., Dejonckheere et al., 2019), when evaluating whether emotion goal variability predicts mental health, we controlled for the mean levels of emotion goals to account for the overlaps between them, and assessed if emotion goal variability uniquely predicts mental health. Second, prior research has shown that the mean levels and variability of emotional experiences are critical predictors of psychological well-being and mental health. Moreover, how intensely people want to experience an emotion tends to be correlated with how intensely people actually experience that emotion (e.g., Millgram, Joormann, et al., 2019; Millgram, Sheppes, et al., 2019; Tamir et al., 2017). Therefore, as a second step of the model-building process, we calculated the same set of dynamic measures for emotional experiences, estimated their mean levels, and controlled for them in the regression models. We sought to examine if the variability of emotion goals adds any information in addition to these other significant predictors of mental health.

To conduct the analyses, we assessed the within-person SD of emotion goals (e.g., $SD_{UE\ goal}$). In Step 1, following prior research on the variability of emotions (Gruber et al., 2013), we ran a regression model, with $SD_{UE\ goal}$ and the means of emotion goals (e.g., $M_{UE\ goal}$) entered as simultaneous predictors, and mental health entered as the dependent variable. In Step 2, we added the variability (e.g., SD_{UE}) and means of emotions (e.g., M_{UE}) as covariates in the model to assess if potential links between emotion goal variability and mental health would be accounted for by dynamics and mean levels of corresponding emotional experiences. We repeated this procedure for $SD_{PE\ goal}$, $RMSSD_{UE\ goal}$, and $RMSSD_{PE\ goal}$, respectively.

Within-Person Analyses

Because inertia is operationalized as the autoregression coefficient, multilevel modeling was applied to examine the relationship between inertia and mental health, using the lmer package in R (Bates et al., 2015). To examine the inertia of emotion goals, we fitted a multilevel autoregressive model where emotion goal was the dependent variable and lagged emotion goal (person-mean

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[1] Another measure to assess variability is the relative variability (RSD) index, which corrects for the dependency between variability and mean levels mathematically by accounting for the maximum possible sample variance (Mestdagh et al., 2018). Results using RSD replicated the findings in Study 1 but only partially replicated Study 2, potentially due to the flooring effects in Study 2 data. See the online supplemental materials for these results and a detailed discussion of them.

centered) was the Level-1 predictor. Following Koval et al. (2016), mental health outcome was entered as a Level-2 predictor in the model. We included the random intercept and random slope for lagged emotion goals. The final model is specified below.

$$\text{Level 1:} \quad \text{Emotion goal}_{ti} = \pi_{oi} + \pi_{1i} \, (\text{Emotion goal}_{t-1i}) + e_{ti}.$$
$$\text{Level 2:} \quad \pi_{oi} = \beta_{00} + \beta_{01} \, (\text{Mental health}_i) + r_0 i$$
$$\pi_{1i} = \beta_{10} + \beta_{11} \, (\text{Mental health}_i) + r_1 i.$$

(1)

As Koval et al. (2016) recommended, the Level-2 intercept β_{10} indicates the average level inertia of emotion goals across the sample, and the Level-2 slope β_{11} reflects the association between mental health and emotion goal inertia. We conducted this analysis for unpleasant and pleasant emotion goals (UE and PE goals, respectively), separately.

Results

We report the descriptive statistics of all measures estimated at the between-person level as well as the correlations between them. As Table 2 shows, variability of emotion goals or emotional experiences were not directly correlated with indices of mental health. The correlations between variability of emotion goals and variability of emotional experiences were positive and ranged between .22 ($p = .098$) to .46 ($p < .001$), suggesting that the dynamics of emotion goals and emotional experiences are unique constructs, that may nonetheless be related.

Results for the main analyses are presented in Tables 4–6. Given the large set of results, below, we focus on discussing findings on emotion goal dynamics.

Unpleasant Emotion Goal Dynamics and Mental Health

We assessed multicollinearity of the predictors in all models by using the variance inflation factor (VIF < 0. 32) and the collinearity tolerance statistics (all greater than 0.30), indicating the absence of multicollinearity.

Variability. First, in Step 1, both $SD_{\text{UE goal}}$ and $M_{\text{UE goal}}$ scores were entered as simultaneous predictors in a regression model with mental health entered as the outcome. We found that variability in

unpleasant emotion goals was negatively associated with mental health (see Table 4), $B = -1.217$, $SE = 0.470$, $p = .012$, suggesting that people who exhibited higher variability in unpleasant emotion goals were likely to report better mental health (i.e., lower levels of clinical and depressive symptoms). This significant association held in step 2, $B = -1.364$, $SE = 0.495$, $p = .008$, after adding unpleasant emotion variability (SD_{UE}) and mean unpleasant emotion (M_{UE}) to the regression equation.

Results on RMSSD mirrored the findings on within-person SD (see Table 4). RMSSD$_{\text{UE goal}}$ significantly predicted mental health in Step 1, $B = -.727$, $SE = 0.308$, $p = .022$; and this significant association held, $B = -0.787$, $SE = 0.319$, $p = .017$, even after controlling for the RMSSD$_{\text{UE}}$ and the M_{UE} in Step 2.

Inertia. Before examining links with mental health, we estimated the average levels of inertia in unpleasant emotion goals, using the same multilevel model described above, but without mental health entered at Level 2. The autoregressive slope was not significant for unpleasant emotion goals, $B = 0.062$, $SE = 0.054$, $p = .253$, 95% CI [−0.043, 0.168], $R^2 = .005$, suggesting that unpleasant emotion goals might not display moment-to-moment predictability. Next, we examined associations between inertia in unpleasant emotion goals and mental health. As Table 6 shows, contrary to our prediction, they were not associated, $B = 0.183$, $SE = 0.132$, $p = .174$.

Pleasant Emotion Goal Dynamics and Mental Health

We repeated the above analyses for pleasant emotion goals. Here, tolerance statistics were ≥ 0.27, with the VIF ≤ 3.76, indicating no problems with multicollinearity.

Variability. Overall, variability in pleasant emotion goals was not significantly linked to mental health. As shown in Table 5, in Step 1, when using the variability ($SD_{\text{PE goal}}$ or RMSSD$_{\text{PE goal}}$) and mean levels of pleasant emotion goals to predict mental health, in both Steps 1 and 2, the models yielded negative adjusted R-squared values, suggesting that the linear regression models performed poorly and these variables contributed little to the explained variance in mental health. In both Steps 1 and 2, variability in pleasant emotion goals was not linked to mental health.

Table 2
Descriptive Statistics and Correlations Between All Variables in Study 1

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. $M_{\text{PE goal}}$	6.36	1.75	—											
2. $SD_{\text{PE goal}}$	1.12	0.57	−.60**	—										
3. RMSSD$_{\text{PE goal}}$	1.32	0.63	−.57**	.93**	—									
4. $M_{\text{UE goal}}$	1.21	0.33	−.01	.11	.1	—								
5. $SD_{\text{UE goal}}$	0.37	0.36	.07	.19	.23	.77**	—							
6. RMSSD$_{\text{UE goal}}$	0.49	0.5	.12	.15	.23	.70**	.98**	—						
7. M_{PE}	5.51	1.31	.73**	−.40**	−.36**	.03	.07	.13	—					
8. SD_{PE}	1.24	0.41	−.05	.46**	.33*	−.03	.07	.03	−.24	—				
9. RMSSD$_{\text{PE}}$	1.52	0.51	.06	.26	.22	−.12	.03	.04	−.11	.88**	—			
10. M_{UE}	1.81	0.72	.14	−.1	−.08	.52**	.36**	.29*	−.22	.1	−.01	—		
11. SD_{UE}	0.77	0.42	.30*	−.09	−.08	.27*	.33*	.28*	−.13	.39**	.35**	.73**	—	
12. RMSSD$_{\text{UE}}$	0.96	0.54	.34*	−.1	−.1	.23	.28*	.25	−.08	.40**	.40**	.66**	.96**	—
13. MH	−0.76	0.36	−.12	−.06	−.05	.30*	.05	.02	−.25	−.01	.00	.32*	.24	.25

Note. $N = 56$. The second and third columns display the M and SD of each variable. M = mean; SD = standard deviation; $M_{\text{PE goal}}$ = mean levels of pleasant emotion goals. $SD_{\text{PE goal}}$ = within-person standard deviation of pleasant emotion goals. RMSSD$_{\text{PE goal}}$ = square root of the mean squared successive difference of pleasant emotion goals. UE goal = unpleasant emotion goal; PE = pleasant emotion; UE = unpleasant emotion; MH = mental health (z-transformed), which was computed as the composite scores of clinical and depressive symptoms; higher scores reflect worse mental health.
* $p < .05$. ** $p < .01$.

Inertia. The autoregressive slope of pleasant emotion goals was positive and statistically significant, $B = 0.274$, $SE = 0.041$, $p < .001$, 95% CI [0.194, 0.355], $R^2 = .089$, suggesting that pleasant emotion goals displayed significant moment-to-moment predictability. However, as Table 6 shows, inertia in pleasant emotion goals was not linked to mental health, $B = -0.048$, $SE = 0.112$, $p = .668$.

Discussion

Using data from a 10-day EMA study, we found that variability in unpleasant (but not pleasant) emotion goals was associated with better mental health (i.e., lower levels of clinical and depressive symptoms). These results held when controlling for mean levels of emotion goals, as well as the variability and mean levels of emotional experiences, indicating that better mental health is linked to greater variability in unpleasant emotion goals, independent of the mean levels of such goals or mean levels or dynamics of corresponding emotional experiences. Inertia in either unpleasant or pleasant emotion goals, however, was unrelated to mental health.

Although not the focus of our investigation, we also observed that in the final models, mean unpleasant emotion goals were positively linked to detrimental psychological outcomes (see Table 4), suggesting that the more people desired to feel unpleasant emotions, in general, the worse off their mental health. This is consistent with prior work linking depression to a stronger preference for unpleasant emotions (Millgram, Joormann, et al., 2019; Millgram, Sheppes, et al., 2019). Mean pleasant emotion goals, however, were not associated with mental health.

Study 1 has several limitations. First, it included only four assessments per day, which might not provide sufficient sampling to capture moment-to-moment dynamic changes of emotion goals in daily life. Second, the person-level sample size was relatively small, potentially limiting our statistical power in the between-person analyses (i.e., the link between emotion goal variability and mental health). Third, we focused on four discrete emotions, which might limit the robustness of the estimations of unpleasant and pleasant emotion goals. We addressed all these limitations in Study 2, which aimed to replicate our results.

Study 2

In Study 2, we used data from a 7-day EMA study, enabling us to address the limitations of Study 1. First, Study 2 included eight EMA prompts per day, to better capture the dynamic changes of emotion goals in daily life. Second, the study included a larger sample of healthy individuals, resulting in greater statistical power. Third, the study included assessments of a wider range of emotions. Fourth, the study included stronger and additional measures of mental health. Specifically, in addition to a more extensive measure of depressive symptoms, the study included measures of perceived stress and anxiety symptoms. We expected to replicate the findings in Study 1, predicting that variability in unpleasant emotion goals would be linked to better mental health.

Method

Participants and Study Procedure

The final sample consisted of 173 participants recruited in Australia (132 women, 38 men, and three other gender identities; $M_{age} = 28.84$, $SD_{age} = 10.24$). The ethnic composition of the sample was: 50% White or Caucasian, 17% East Asian, and 16% South

Asian, with 17% identifying as other ethnicities. Participants were recruited largely through online advertisement (e.g., Facebook, $n = 107$), as well as from the University of Melbourne Research Experience Program (i.e., first-year undergraduate students, $n = 28$), and the participant pool at the University of Melbourne ($n = 38$). The larger project of Study 2 assessed associations between emotion and emotion regulation in everyday life. We predetermined to recruit at least 152 participants, based on data from a previous study (Dejonckheere et al., 2019; $t = 2.7$, $N = 104$, 90% power with an alpha of .05), using the summary-statistics-based power analysis for multilevel models (Murayama et al., 2022). We oversampled to recruit 173 participants in the final sample.

Participants completed a baseline survey and an EMA study. Participants who did not own a smartphone to take EMA surveys, and those who resided outside of Australia (due to coordination challenges across different time zones) were excluded from the EMA study. Participants received up to $45 AUD or three course credits in exchange for their participation. At baseline, participants completed measures of mental health, as well as measures assessing emotion-relevant trait variables, which were not relevant to the current project and will not be discussed here. Following the baseline survey, participants completed a 7-day EMA protocol. Eight EMA surveys (between 10:00 a.m. and 8:00 p.m.) were delivered to participants at random times via the SEMA3 app (Koval et al., 2019). There were at least 30 min between each survey. In each EMA survey, participants rated the extent to which they experienced seven discrete emotions and the desirability of each emotion (i.e., emotion goals). Based on the exclusion criteria recommended by Geeraerts (2020), we omitted responses submitted in less than 650 ms (0.02% of all item responses) and EMA surveys (0.02% of all surveys) that had more than 50% of the items completed in less than 650 ms, resulting in a total number of 9,580 EMA surveys.

Measures

Each EMA survey included measures of pleasant and unpleasant emotional experiences and goals. We computed the same set of dynamic measures (i.e., variability and inertia) for both emotion goals. Similar to Study 1, we also computed indices of emotional dynamics and controlled for them in subsequent analyses. Mental health was measured in a baseline survey (prior to the EMA study).

Emotion Goals. Study 2 measured the four emotional states assessed in Study 1 (sadness, happiness, anxiety, and calmness) and included additional items to increase the reliabilities of the scale: hopeful, stressed, and angry. These items were presented to participants in a random order. Participants indicated how much they wanted to experience each emotion (see Table 1). Ratings on the pleasant items and unpleasant items were averaged to form scales for pleasant emotion goals ($\omega_{between} = .95$, $\omega_{within} = .59$) and unpleasant emotion goals ($\omega_{between} = .96$, $\omega_{within} = .65$), respectively.

Emotional Experiences. Participants rated how much they experienced each of the seven emotional states. We created composite measures for pleasant emotions ($\omega_{between} = .96$, $\omega_{within} = .74$) and unpleasant emotions ($\omega_{between} = .92$, $\omega_{within} = .76$) by averaging items of the same valence.

Mental Health

Depressive Symptoms. We included the 20-item version of the CES-D (Radloff, 1977). Items were averaged to form a composite score ($\alpha = .90$).

Perceived Stress. We included the 10-item Perceived Stress Scale (PSS-10; Cohen et al., 1983). Participants responded to items that assessed their levels of distress (e.g., In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?) on a 1 (*never*) to 4 (*very often*) scale ($\alpha = .86$).

Anxiety Symptoms. We included the seven-item Generalized Anxiety Disorder Scale (GAD-7; Spitzer et al., 2006). Participants rated how often in the past week they experienced various anxiety symptoms (e.g., trouble relaxing) on a scale ranging from 1 (*not at all*) to 4 (*nearly every day*). Higher scores on this measure indicated more severe anxiety symptoms ($\alpha = .88$).

Similar to Study 1, depressive symptoms, perceived stress, and anxiety symptoms were strongly correlated, rs $> .51$, ps $< .001$. Thus, we z-transformed these three measures and used their composite scores as an index of mental health ($\alpha = .82$). Similar to Study 1, combining these measures did not change the pattern of the findings (see the online supplemental materials for results on individual mental health measures).

Results

We followed the same analytical procedure described in Study 1 to test associations between emotion goal dynamics and mental health. Table 3 displays the descriptive statistics and correlations. Replicating Study 1, variability of emotion goals or emotional experiences was not significantly correlated with mental health. Similarly, we found moderate positive correlations between variability of emotion goals and variability of emotional experiences (.38 < r < .57, ps < .001). Results of stepwise regression analyses are presented in Tables 4–6 and discussed below.

Unpleasant Emotion Goal Dynamics and Mental Health

We found no issues of multicollinearity in all models (VIF ≤ 2.69 and the collinearity tolerance statistics were all greater than .37).

Variability. Replicating the findings in Study 1, $SD_{UE\ goal}$ was significantly linked to mental health in Step 1 (see Table 4), $B = -0.037$, $SE = 0.016$, $p = .023$, and this association remained significant in Step 2, $B = -0.059$, $SE = 0.016$, $p < .001$, even after

controlling for unpleasant emotion variability (SD_{UE}) and mean unpleasant emotion (M_{UE}) in Step 2. We observed the same pattern of results with the other measure of variability. Specifically, $RMSSD_{UE\ goal}$ significantly predicted mental health in Step 1, $B = -0.024$, $SE = 0.012$, $p = .041$; and this significant association held in Step 2, $B = -0.033$, $SE = 0.012$, $p = .007$, after controlling for the instability ($RMSSD_{UE}$) and means (M_{UE}) of unpleasant emotions. Thus, people who displayed higher variability in unpleasant emotion goals were likely to have better mental health, such as lower levels of depressive and anxiety symptoms and less stress.

Inertia. We first assessed the autoregressive slope of unpleasant emotion goals in a multilevel model without mental health at Level 2. Different from Study 1, unpleasant emotion goals displayed significant persistence from moment to moment, $B = 0.216$, $SE = 0.027$, $p < .001$, 95% CI [0.162, 0.269], $R^2 = .049$. This difference might be due to Study 2 having more EMA surveys on each sampling day than Study 1, thus the data provide a more accurate picture of the moment-to-moment changes in emotion goals. However, replicating Study 1, inertia in unpleasant emotion goals was not significantly associated with mental health, $B = -0.021$, $SE = 0.032$, $p = .516$ (see Table 6).

Pleasant Emotion Goal Dynamics and Mental Health

Results of the VIF (all less than 2.42) and collinearity tolerance (all greater than 0.41) suggested no issues with multicollinearity.

Variability. Replicating Study 1, variability in pleasant emotion goals was not linked to mental health. Once again, when using the variability (i.e., $SD_{PE\ goal}$ or $RMSSD_{PE\ goal}$) and mean levels of pleasant emotion goals ($M_{PE\ goal}$) to predict psychological outcomes, in Step 1, the model yielded negative adjusted R^2 values (see Table 5), suggesting that these variables contributed little to explaining the variance in mental health. In Step 2, adding the variability and mean levels of pleasant emotions to the models increased the percentage of variance explained in each outcome. However, the effect of variability in pleasant emotion goals was not significant.

Inertia. Replicating Study 1, pleasant emotion goals showed significant moment-to-moment predictability (i.e., evidence of

Table 3
Descriptive Statistics and Correlations Between All Variables in Study 2

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. $M_{PE\ goal}$	8.16	15.83	—											
2. $SD_{PE\ goal}$	9.05	5.79	−.58**	—										
3. $RMSSD_{PE\ goal}$	1.6	6.79	−.55**	.88**	—									
4. $M_{UE\ goal}$	7.15	1.47	−.47**	.35**	.31**	—								
5. $SD_{UE\ goal}$	5.33	5.55	−.41**	.58**	.51**	.69**	—							
6. $RMSSD_{UE\ goal}$	6.45	7.18	−.37**	.50**	.47**	.62**	.95**	—						
7. M_{PE}	57.32	18.37	.55**	−.32**	−.31**	−.12	−.12	−.12	—					
8. SD_{PE}	13.23	5.63	−.02	.38**	.37**	.03	.26**	.22**	−.32**	—				
9. $RMSSD_{PE}$	15.03	7.16	−.14	.46**	.48**	.18*	.39**	.32**	−.28**	.85**	—			
10. M_{UE}	23.59	14.9	−.17*	.17*	.18*	.49**	.35**	.33**	−.53**	.20**	.22**	—		
11. SD_{UE}	12.32	5.85	.06	.29**	.31**	.1	.39**	.37**	−.25**	.69**	.58**	.42**	—	
12. $RMSSD_{UE}$	13.63	6.73	−.1	.43**	.43**	.25**	.58**	.57**	−.22**	.63**	.70**	.41**	.79**	—
13. MH	0.00	0.87	.00	.01	.04	.1	−.06	−.07	−.44**	.19*	.09	.50**	.27**	.14

Note. $N = 173$. The second and third columns display the mean and standard deviation of each variable. M = mean; SD = standard deviation; $M_{PE\ goal}$ = mean levels of pleasant emotion goals; $SD_{PE\ goal}$ = within-person standard deviation of pleasant emotion goals; $RMSSD_{PE\ goal}$ = square root of the mean squared successive difference of pleasant emotion goals; UE goal = unpleasant emotion goal; PE = pleasant emotion; UE = unpleasant emotion. MH = mental health (z-transformed), which was computed as the composite scores of depressive symptoms, perceived stress, and symptoms of anxiety disorder; higher scores reflect worse mental health.
* $p < .05$. ** $p < .01$.

Table 4
Stepwise Regression Analyses: Predicting Mental Health with Variability Unpleasant Emotion Goals

| | SD | | | | | | | | RMSSD | | | | | | | | |
| | Step 1 | | | | Step 2 | | | | | Step 1 | | | | Step 2 | | | |
Effects	B (SE)	p	95% CI	η²p	B (SE)	p	95% CI	η²p	Effects	B (SE)	p	95% CI	η²p	B (SE)	p	95% CI	η²p
Study 1																	
Intercept	0.064 (0.116)	.583	[−0.169, 0.297]	—	0.158 (0.148)	.290	[−0.138, 0.454]	—	Intercept	0.077 (0.117)	.513	[−0.157, 0.311]	—	0.163 (0.149)	.279	[−0.136, 0.461]	—
SD$_{UE\ goal}$	**−1.217 (0.470)**	**.012**	**[−2.159, −0.275]**	**.008**	**−1.364 (0.495)**	**.008**	**[−2.359, −0.370]**	**.008**	RMSSD$_{UE\ goal}$	**−0.727 (0.308)**	**.022**	**[−1.344, −0.109]**	**.003**	**−0.787 (0.319)**	**.017**	**[−1.427, −0.146]**	**.003**
M$_{UE\ goal}$	**2.067 (0.523)**	**.000**	**[1.018, 3.117]**	**.227**	**1.991 (0.607)**	**.002**	**[0.773, 3.209]**	.238	M$_{UE\ goal}$	**1.810 (0.474)**	**.000**	**[0.858, 2.761]**	.215	**1.700 (0.555)**	**.004**	**[0.585, 2.815]**	.226
SD$_{UE}$					0.447 (0.407)	.277	[−0.369, 1.263]	.060	RMSSD$_{UE}$					0.340 (0.287)	.241	[−0.236, 0.916]	.058
M$_{UE}$					0.039 (0.265)	.884	[−0.493, 0.570]	.000	M$_{UE}$					0.040 (0.246)	.873	[−0.453, 0.533]	.001
Adjust R²				.204				.222	Adjust R²				.188				.205
Study 2																	
Intercept	0.001 (0.065)	.982	[−0.127, 0.130]	—	−0.002 (0.055)	.972	[−0.110, 0.106]	—	Intercept	−0.005 (0.066)	.938	[−0.136, 0.126]	—	0.000 (0.056)	.994	[−0.111, 0.110]	—
SD$_{UE\ goal}$	**−0.037 (0.016)**	**.023**	**[−0.070, −0.005]**	**.003**	**−0.059 (0.016)**	**.000**	**[−0.090, −0.028]**	**.003**	RMSSD$_{UE\ goal}$	**−0.024 (0.012)**	**.041**	**[−0.048, −0.001]**	**.004**	**−0.033 (0.012)**	**.007**	**[−0.057, −0.009]**	**.006**
M$_{UE\ goal}$	**0.022 (0.009)**	**.013**	**[0.005, 0.039]**	**.036**	0.008 (0.009)	.374	[−0.009, 0.025]	.051	M$_{UE\ goal}$	**0.018 (0.008)**	**.028**	**[0.002, 0.034]**	**.029**	−0.003 (0.008)	.668	[−0.019, 0.012]	.040
SD$_{UE}$					**0.030 (0.012)**	**.013**	**[0.006, 0.053]**	.178	RMSSD$_{UE}$					0.009 (0.011)	.401	[−0.013, 0.031]	.085
M$_{UE}$					**0.029 (0.005)**	**.000**	**[0.020, 0.039]**	.184	M$_{UE}$					**0.034 (0.005)**	**.000**	**[0.025, 0.043]**	.243
Adjust R²				.028				.318	Adjust R²				.021				.299

Note. Significant effects are displayed in bold text. UE = unpleasant emotion; SD = standard deviation; RMSSD = square root of the mean squared successive difference.

inertia), $B = 0.231$, $SE = 0.024$, $p < .001$, 95% CI [0.183, 0.278], $R^2 = .052$. Similarly, we found that inertia in pleasant emotion goals was not significantly linked to mental health, $B = −0.049$, $SE = 0.028$, $p = .082$ (see Table 6).

Discussion

Study 2 replicated the findings in Study 1. Using a larger sample, more EMA prompts per day, a wider range of emotional states assessed, and more indices of mental health, we found that variability in unpleasant (but not pleasant) emotion goals was linked to better mental health. This association could not be explained by mean levels of emotion goals, or the variability and mean levels of experienced emotions. Similar to Study 1, inertia in emotion goals was not linked to mental health.

We also replicated the findings in Study 1, showing that stronger unpleasant emotion goals were linked to worse mental health (see Table 4), suggesting that a greater desire to feel unpleasant may be harmful. In contrast to Study 1, in the final models of Study 2 (see Table 5), stronger pleasant emotion goals were also linked to worse mental health. This difference could be due to the larger sample size in Study 2, which could offer more power to detect such potential links. This finding replicated prior research showing that a more intense desire for pleasant emotions, such as happiness, is linked to poorer mental health (e.g., Ford & Mauss, 2014).

General Discussion

Emotion goals carry downstream implications for psychological health and well-being (e.g., Tamir et al., 2017), and so changes or stability of emotion goals may also carry consequences for mental health. This research is the first, to our knowledge, to investigate associations between emotion goal dynamics and mental health. Using data from two separate EMA studies collected from two countries and a diverse set of mental health measures, we consistently found that variability in unpleasant emotion goals is linked to better mental health, even after controlling for mean levels of unpleasant emotion goals, and the variability and mean levels of unpleasant emotional experiences. These findings suggest that regardless of how unpleasant people want to feel in general, how unpleasant people actually feel in general, or how variable people's experienced unpleasant emotions are, greater changes from mean levels in unpleasant emotion goals are associated with better mental health outcomes. Thus, emotion goal variability might help explain individual differences in mental health. These effects, although small, are consistent and potentially informative.

Second, we found that the variability and the mean level of emotion goals were linked to mental health in opposite directions. Having a stronger preference for unpleasant emotions, in general, was linked to lower mental health (e.g., more severe clinical and depressive symptoms). However, having greater variability in unpleasant emotion goals is linked to better mental health. Results on links between mean levels of unpleasant emotion goals and mental health replicated prior research (e.g., Millgram et al., 2015) by showing that pursuing more intense unpleasant emotions on average is related to more depressive symptoms. Findings on the variability of unpleasant emotion goals provide novel direct evidence that wanting to feel more unpleasant is not always harmful: the dynamic changes in unpleasant emotion goals can be adaptive.

Table 5
Stepwise Regression Analyses: Predicting Mental Health With Variability in Pleasant Emotion Goals

| | SD | | | | | | | | RMSSD | | | | | | | |
| | Step 1 | | | | Step 2 | | | | Step 1 | | | | Step 2 | | | |
Effects	B (SE)	p	95% CI	η²p	B (SE)	p	95% CI	η²p	B (SE)	p	95% CI	η²p	B (SE)	p	95% CI	η²p
Study 1																
Intercept	−0.011 (0.125)	.930	[−0.262, 0.240]	—	0.104 (0.150)	.494	[−0.198, 0.405]	—	−0.028 (0.130)	.828	[−0.289, 0.232]	—	0.091 (0.155)	.560	[−0.220, 0.402]	—
SD$_{PE\ goal}$ / RMSSD$_{PE\ goal}$	−0.304 (0.272)	.268	[−0.849, 0.241]	.004	−0.280 (0.338)	.411	[−0.958, 0.398]	.004	−0.241 (0.241)	.322	[−0.724, 0.242]	.003	−0.195 (0.259)	.454	[−0.715, 0.324]	.003
M$_{PE\ goal}$	−0.112 (0.088)	.206	[−0.288, 0.064]	.030	0.000 (0.137)	.997	[−0.274, 0.274]	.031	−0.103 (0.086)	.237	[−0.275, 0.070]	.026	0.016 (0.126)	.897	[−0.237, 0.270]	.027
SD$_{PE}$ / RMSSD$_{PE}$					0.008 (0.389)	.983	[−0.772, 0.789]	.007					−0.026 (0.268)	.922	[−0.563, 0.511]	.002
M$_{PE}$					−0.197 (0.152)	.199	[−0.198, 0.405]	.032					−0.200 (0.144)	.171	[−0.490, 0.089]	.036
Adjust R²	−0.003				−0.001				−0.008				−0.007			
Study 2																
Intercept	0.000 (0.067)	1.000	[−0.131, 0.131]	—	−0.005 (0.057)	.931	[−0.117, 0.107]	—	−0.008 (0.067)	.908	[−0.140, 0.125]	—	−0.009 (0.057)	.872	[−0.121, 0.103]	—
SD$_{PE\ goal}$ / RMSSD$_{PE\ goal}$	0.002 (0.014)	.907	[−0.026, 0.030]	.000	0.003 (0.014)	.806	[−0.024, 0.031]	.000	0.007 (0.012)	.555	[−0.016, 0.031]	.001	0.014 (0.012)	.242	[−0.009, 0.037]	.001
M$_{PE\ goal}$	0.000 (0.005)	.938	[−0.010, 0.011]	.000	**0.020 (0.006)**	**.000**	**[0.009, 0.031]**	**.000**	0.002 (0.005)	.728	[−0.008, 0.012]	.001	**0.023 (0.005)**	**.000**	**[0.013, 0.034]**	**.000**
SD$_{PE}$ / RMSSD$_{PE}$					−0.002 (0.012)	.886	[−0.026, 0.023]	.059					−0.012 (0.010)	.214	[−0.031, 0.007]	.009
M$_{PE}$					**−0.030 (0.004)**	**.000**	**[−0.038, −0.022]**	**.248**					**−0.032 (0.004)**	**.000**	**[−0.040, −0.025]**	**.300**
Adjust R²	−0.012				.265				−0.010				.289			

Note. Significant effects are displayed in bold text. PE = pleasant emotion; SD = standard deviation; RMSSD = square root of the mean squared successive difference.

Third, we observed that variability in unpleasant, but not pleasant, emotion goals was associated with mental health. Variability or fluctuations in goals can reflect context-sensitivity in that a person is evaluating the environment, updating their responses, and choosing the appropriate goals to act upon (e.g., Kuppens & Verduyn, 2015). But why did variability in unpleasant emotion goals differ from variability in pleasant emotion goals? One possibility is that when people want to feel unpleasant, it is primarily for instrumental reasons (e.g., Kalokerinos et al., 2017), which are context-dependent. As context changes, the potential instrumental value of unpleasant emotions changes, so that changing emotion goals is adaptive. In contrast, when people want to feel pleasant emotions, it could be for either hedonic or instrumental reasons, both of which could be beneficial. Whereas instrumental reasons are more context-dependent, hedonic reasons are not. In this respect, if hedonic motivation is beneficial, it could be beneficial across contexts. Thus, the overall dynamic changes in pleasant emotion goals may be less adaptive and therefore not significantly linked to mental health.

Fourth, across both studies, we did not find any significant association between emotion goal inertia and mental health. The lack of effects for inertia is not necessarily inconsistent with the findings on emotion goal variability. This null relationship could suggest that sticking with the same emotion goal, in general, is not necessarily bad. For example, when the contexts do not change from one moment to another, it does not hurt for people to remain in the same course of action and continue pursuing the same emotion goal they had before, because there is no need to change. However, when the situation calls for a change, prescribing the goal that fits the situation is key.

Lastly, when examining raw correlations, variability in emotion goals was not significantly linked to mental health. The absence of a direct, significant correlation between indices of variability and mental health suggests that the dynamic measures alone may provide limited predictive power (see Dejonckheere et al., 2019). However, when controlling for mean levels of emotion goals (Step 1 models), notable differences appeared. We observed that the different measures of variability in unpleasant emotion goals were consistently linked to better mental health, although the effect size of this association was small. One potential explanation of these findings is that variability may be confounded with means (Blanke et al., 2020), and controlling for the means separates flexibility from instability—people with high variability and high means in unpleasant emotion goals might be more likely to show unstable patterns (high reactivity), whereas people with high variability but low means in unpleasant emotion goals might be more likely to show flexible patterns (high context-sensitivity). This explanation is speculative and needs to be further examined in future research. Nonetheless, together, these results mirrored previous findings on emotional dynamics and mental health (Dejonckheere et al., 2019), in that the dynamics and mean levels of emotion goals should be grouped together to understand their contribution to mental health.

Implications for Psychological Flexibility and Emotion Regulation

The dynamic nature of emotion goals may advance our understanding of flexible functioning and emotion regulation. Psychological flexibility requires variable, context-sensitive responses to the

Table 6
Multilevel Autoregressive Models Estimating the Associations Between Emotion Goal Inertia and Mental Health

Fixed effects	Unpleasant emotions				Fixed effects	Pleasant emotions			
	B (SE)	p	95% CI	R^2		B (SE)	p	95% CI	R^2
Study 1									
Intercept	1.404 (0.100)	.000	[1.209, 1.600]	—	Intercept	5.873 (0.527)	.000	[4.839, 6.906]	—
UE goal$_{t-1}$	0.196 (0.108)	.074	[−0.015, 0.406]	.007	PE goal$_{t-1}$	0.238 (0.094)	.014	[0.054, 0.422]	.013
MH	0.244 (0.119)	.045	[0.011, 0.477]	.032	MH	−0.690 (0.630)	.279	[−1.925, 0.546]	.051
UE Goal$_{t-1}$ × MH	0.183 (0.132)	.174	[−0.077, 0.442]	.005	PE Goal$_{t-1}$ × MH	−0.048 (0.112)	.668	[−0.267, 0.171]	.000
Study 2									
Intercept	6.876 (0.804)	.000	[5.291, 8.461]	—	Intercept	79.969 (1.252)	.000	[77.534, 82.170]	—
UE goal$_{t-1}$	0.213 (0.028)	.000	[0.154, 0.272]	.046	PE goal$_{t-1}$	0.226 (0.024)	.000	[0.179, 0.275]	.050
MH	1.195 (0.926)	.199	[−0.619, 3.008]	.024	MH	0.002 (1.434)	.999	[−2.648, 2.605]	.002
UE Goal$_{t-1}$ × MH	−0.021 (0.032)	.516	[−0.084, 0.043]	.000	PE Goal$_{t-1}$ × MH	−0.049 (0.028)	.082	[−0.107, 0.008]	.000

Note. UE = unpleasant emotion; PE = pleasant emotion; MH = mental health.

environment (Kalokerinos & Koval, in press). In contrast to variability in emotions, which can capture high reactivity to the environment and is often linked to worse mental health outcomes (e.g., Gruber et al., 2013; Lamers et al., 2018; Thompson et al., 2012), we found that variability in emotion goals is linked to beneficial outcomes, even if the goals are to feel unpleasant. It is possible that variability in emotion goals reflects context-sensitivity, in that individuals with higher emotion goal variability may have a more flexible regulatory system that is not only sensitive to changes in the environment, but also capable of responding with emotion goals that better fit the features of the situation.

Additionally, unpleasant emotion goal variability is beneficial to mental health, even after accounting for the effects of mean unpleasant emotion goals, and the variability and means of unpleasant emotional experiences. Variability in emotion goals across time and situations might involve the ability to identify what is the desired emotion to feel in a specific situation. Such ability can make unique contributions to the prediction of mental health, in ways beyond the implications of the mean levels of emotion goals, as well as (both the dynamic patterns and mean levels of) emotional experiences in daily life. These results demonstrate that variability in emotion goals can have an adaptive value, to the extent that they reflect regulatory flexibility.

Our results also highlight the importance of understanding the role that emotion goals play in shaping regulatory flexibility. Thus far, research on flexibility in emotion regulation has primarily focused on the temporal changes in the uses of regulatory strategies (e.g., Benson et al., 2019; Blanke et al., 2020; Bonanno & Burton, 2013; Wang et al., 2021). For instance, between-strategy variability (e.g., using different strategies within a situation) has been linked to lower depressive symptoms (e.g., Blanke et al., 2020; Wang et al., 2021). However, emotion regulation operates in the service of emotion goals. Emotion regulation begins when individuals identify the goal of regulation and is followed by the selection and implementation of specific regulatory strategies (Gross, 2015). To our knowledge, these are the first set of findings to demonstrate that regulatory flexibility may unfold early in emotion regulation, before regulatory strategies are selected. They add to our understanding of emotion regulation as a process that requires flexibility in reacting to changing situations. It is important to know what tools (strategies) to use to succeed in emotion regulation, but it may be equally important to identify the right emotion goals in the first place.

Furthermore, the dynamic changes in emotion goals differ from the dynamic changes in emotions. Variability (both within-person SD and RMSSD) in emotion goals and variability in emotional experiences were positively correlated, but these correlations were weak to moderate. Additionally, their links to mental health were different. For example, in Study 2 (Step 2 model for variability), $SD_{UE\ goal}$ was negatively linked to detrimental mental health outcomes, whereas SD_{UE} was positively linked to detrimental mental health outcomes. Together, these findings suggest that it is important to examine emotion goals and emotional experiences separately in order to understand their dynamics, their associations, and their independent implications for mental health.

Limitations and Future Directions

To our knowledge, this is the first study to directly examined the associations between emotion goal dynamics and mental health. Nonetheless, this work has some limitations. First, this study is correlational in nature. In both studies, mental health outcomes were assessed before measures of dynamics (EMA study). Thus, the direction of the observed effects is unclear. It is possible that healthy people are more capable of identifying flexible emotion goals across situations, which in turn, provides benefits for mental health. Future research should unpack these processes. Additionally, across both studies, although we have implemented a diverse set of mental health measures, these measures primarily assessed negative indicators of psychological outcomes, such as psychopathological symptoms (e.g., clinical and depressive symptoms). Future studies should replicate these results with positive indicators of psychological health, such as psychological well-being and meaning of life.

Second, we did not directly examine the mechanisms underlying the associations between unpleasant emotion goal variability and mental health. Based on the instrumental approach to emotion regulation (Tamir, 2016), we speculate that seeking unpleasant emotions when the situation calls for it, but not otherwise, could be beneficial (see also Kim et al., 2015). Situational factors may be critical to understanding the temporal changes of emotion goals. For instance, individuals' subjective evaluations of contexts might be related to changes in emotion goals. Investigating this question could inform whether variability is indeed related to the ability to flexibly identify appropriate emotion goals over time. Additionally, some emotions might carry more adaptive value across a wider range of situations, whereas others

might be more maladaptive, in general. Thus, future research can incorporate the examination of situational factors to advance the understanding of the implications of emotion goal dynamics.

Third, the present findings are limited to samples that are healthy, young, and predominately female. Prior research reveals that healthy and depressed individuals can show different patterns of emotional dynamics (e.g., variability and inertia in emotional experiences; Nelson et al., 2020; Thompson et al., 2021). Thus, it is possible that dynamic patterns of emotion goals also differ between healthy individuals and individuals at emotional risk (e.g., those who suffer from depression or other psychopathological disorders). How emotion goal dynamics are linked to mental health may also differ across different types of individuals. For example, whereas extreme fluctuations in emotion goals among healthy individuals might reflect contextsensitivity, such changes might characterize an inability to identify attainable emotion goals among individuals with emotion regulation deficits (e.g., Millgram et al., 2020). Thus, whether the current patterns replicate among other diverse samples, particularly individuals who suffer from mental disorders, remains to be tested in future research.

Related to this point, the present research targeted healthy individuals who generally did not want to experience intense unpleasant emotions. Future research should test whether the current findings replicate in unhealthy samples (e.g., those suffering from clinical disorders), where the mean levels of unpleasant emotion goals tend to be higher, in comparison (e.g., Millgram et al., 2015; Millgram, Joormann, et al., 2019; Millgram, Sheppes, et al., 2019; Mizrahi Lakan, Millgram, & Tamir, 2023). Furthermore, future research should directly test our interpretation of the results, as well as other potential interpretations.

Fourth, we have measured emotion goals by asking participants their desired intensity of various emotions. While measuring or manipulating the desirability of emotion goals has been linked to subsequent emotion-regulatory behaviors in past research (e.g., Millgram et al., 2015; Tamir & Ford, 2012), desirability alone does not imply the formation of a goal. Desirability can transform into a goal, when it is attainable (e.g., Kruglanski et al., 2014). For instance, people may view minimum sadness as desirable but unattainable because their experienced sadness was too intense to change. In this case, the desire for minimum sadness might fail to activate emotion-regulatory behavior. Given these conceptual distinctions, future research could try to tease desirability apart from goal activation in emotion regulation.

Lastly, although not the focus of our investigation, we did not replicate the associations between emotional variability and mental health in either study, as variability in emotional experiences was not significantly correlated with mental health and the effects of most indices of emotional variability in the final regression models were nonsignificant. These findings, however, are not surprising, as meta-analyses show that these links are generally very small in size and are not always consistent (Dejonckheere et al., 2019; Kalokerinos & Koval, in press).

Conclusion

We tested whether the dynamics of emotion goals were associated with mental health in daily life. We found that variability in unpleasant, but not pleasant, emotion goals was linked to better mental health. These effects held even after accounting for mean levels of emotion goals, and

variability and mean levels of emotional experiences. These findings suggest that variability in emotion goals may be adaptive.

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