Supplementary Information

Spontaneous Goal-Related Cognition Predicts Well-Being and Real-World Goal Attainment Across Adulthood in a Think-Aloud Study

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Part I: Participants, Procedures, and Measures

Study 1

Participant Characteristics

Seventy-seven participants (43 F, 33 M, 1 non-binary; ages 17-28 years, *M* = 19.53, *SD* = 2.34) were recruited from the University of Arizona in exchange for course credit. Data collection took place between 2019 and 2020. Exclusion criteria were current drug abuse, major psychiatric disease (except mild-to-moderate depression or anxiety), history of moderate to severe head trauma, neurodevelopmental disorder, or not being fluent in English. Participants were recruited via the University of Arizona Psychology website, departmental listservs, social media advertisements, and referral through participation in other studies. Note that Study 1 participants overlap with those reported in Raffaelli et al.[1,2] and Yu et al.[3] in regard to their usage of the TAP, though different variables were analyzed in those papers.

Measures

Trait Mindfulness. Trait mindfulness was measured using the Mindful Attention and Awareness Scale (MAAS[4]), a 15-item self-report measure rated on a 6-point Likert scale (1 = almost always to 6 = almost never), with higher scores indicating greater dispositional mindfulness. The scale demonstrates strong psychometric properties, including high internal consistency (α = .82) and test-retest reliability. The MAAS total score is the mean of all 15 items.

Depressive Symptomatology. Depressive symptoms were measured with the Patient Health Questionnaire-9 (PHQ-9[5]**),** a 9-item instrument rated on a 4-point scale (0 = not at all to 3 = nearly every day). The sum score (range 0-27) indexes depression severity; scores of 5, 10, 15, and 20 represent thresholds for mild, moderate, moderately severe, and severe depression.

Anxiety Symptomatology. Anxiety in Study 1 was assessed with the Generalized Anxiety Disorder-7 (GAD-7[6]), a 7-item self-report questionnaire rated on a 4-point scale (0 = not at all to 3 = nearly every day). Total scores range from 0 to 21; scores of 5, 10, and 15 represent thresholds for mild, moderate, and severe anxiety.

Study 2

Participant Characteristics

One hundred and four participants were recruited; following exclusions, the final sample consisted of 95 participants (67 F; age range: 18-83 years), including 49 younger adults (age range: 18-35, M = 22.7) and 46 older adults (age range: 60-83, M = 69.7). Data collection took place between 2020 and 2021 as part of a multimodal evaluation of daily naturalistic thought conducted remotely via Zoom Health during the COVID-19 pandemic. Exclusion criteria were identical to Study 1. Participants received either cash compensation or gift cards via email. Participants self-reported their race as follows: Non-Hispanic White (73.7%, n = 70), Latine/Hispanic (13.7%, n = 13), Asian or Asian American (4.2%, n = 4), Black or African American (3.2%, n = 3), Multiracial/Other (2.1%, n = 2), and Native American/Alaska Native (1.1%, n = 1); an additional 2.1% (n = 2) preferred not to answer. Note that Study 2 participants overlap with those reported in Stoica et al.[7] though different variables were analyzed in that paper.

Measures

Trait depression and mindfulness were assessed with the PHQ-9 and MAAS, respectively, using procedures identical to Study 1.

Anxiety Symptomatology. Due to a computational error in data collection, the GAD-7 could not be used as the anxiety measure in Study 2. Instead, we used the 4-item Anxiety subscale of the DSM-5 Self-Rated Level 1 Cross-Cutting Symptom Measure—Adult[8], a 23-item screening tool designed by the American Psychiatric Association to assess symptoms across 13 psychiatric domains over the past two weeks. The 4-item Anxiety subscale within the 23-item screening tool asks participants to rate how often they have been bothered by anxiety symptoms on a 5-point scale ranging from 0 (never) to 4 (nearly every day). The Anxiety subscale score ranges from 0 to 16, with higher scores indicating greater anxiety symptomology.

Think-Aloud Protocol (Both Studies)

We used a Think-Aloud Protocol (TAP) to capture participants' stream of consciousness. Consistent with prior unprompted TAP research[1,9], participants received no direction regarding what to think about. In Study 1, participants sat alone in a normally lit testing room. In Study 2, the protocol was administered remotely via Zoom Health due to COVID-19 precautions, experimenters shut video and audio off to minimize censorship.

Following a brief practice period, participants were asked to put away their phones and minimize distractions. They then verbalized their resting-state thoughts continuously for ten minutes. Instructions specified that participants should verbalize whatever came to mind, including internal thoughts or mental images, perceptions of external stimuli, and bodily sensations or feelings (e.g., discomfort, pain, or hunger).

TAP Instructions

> *For this task, we want you to describe your stream of consciousness. It consists of you simply voicing out loud whatever comes to your mind. At times, your attention might be oriented outwards, towards the sights and sounds of your external environment. At other times, you may be thinking about a particular topic, or your attention may be oriented towards your feelings, bodily sensations, or emotions. Regardless of what comes to mind at different moments in time, we would like you to continuously relay that information out loud.*
>
> *Please know that no one outside the room will be able to hear what you say. The person who will transcribe the audio will not know your name and will not be the experimenter present during the experimental session.*
>
> *In summary, we ask that you remain awake and simply voice out loud whatever comes to your mind. Any questions?*

Post-Task Validity Checks

Immediately following the 10-minute TAP session, participants completed post-task questions assessing censorship and similarity to real-life experience using a sliding scale from 1 (not at all) to 5 (extremely). Across the full Study 2 sample (n = 95), participants reported moderate censorship (M = 2.09, SD = 0.91), moderate self-consciousness (M = 2.80, SD = 1.29), and high similarity of verbalizations to typical day-to-day thinking (M = 3.89, SD = 0.93; all reported on a 1-5 scale, 1 = *not at all*, 5 = *extremely*), consistent with values reported in Raffaelli et al.[1]and supporting the ecological validity of the procedure.

Exclusion of TAP Validity Ratings as Covariates

Per preregistration, degree of censorship and similarity to daily thoughts were to be included as covariates if they demonstrated significant first-order associations with MC levels. We note that the preregistration listed "similarity to daily thoughts" as the second validity covariate; however, the post-TAP questionnaire collected three ratings, censorship, self-consciousness, and similarity. and it is likely that self-consciousness was the intended second covariate given its conceptual parallel to censorship as a measure of TAP ecological validity. We therefore tested all three ratings as potential covariates.

Neither censorship nor self-consciousness showed significant associations with any MC level or goal progress (all ps > .22), and both were excluded. Similarity to daily thoughts showed marginal associations with MC0 ($p = .088$) and MC1 ($p = .094$), a significant positive association with MC3 ($\beta = 0.22$, SE = 0.09, $z = 2.40$, $p = .016$), and a significant positive association with goal progress ($\beta = 0.21$, SE = 0.09, $z = 2.28$, $p = .023$), technically meeting the preregistered inclusion threshold.

Despite this, we opted not to include similarity as a covariate in primary models as similarity to daily thoughts likely reflects ecologically meaningful variance rather than methodological artifact: participants whose TAP thoughts resembled their everyday thinking were those whose resting cognition authentically captured their habitual goal-related thought patterns, precisely the variance the TAP is designed to measure. Including similarity would therefore risk removing signal rather than noise. Older and younger adults did not differ significantly on similarity ($t(88.9) = -0.85$, $p = .400$), further indicating it does not introduce systematic age-related confounding.

As a sensitivity check, we ran the primary MC3 models with similarity included as a covariate, as preregistered. The depression-MC3 ($\beta = -0.20$, SE = 0.09, $z = -2.22$, $p = .026$) and anxiety-MC3 ($\beta = -0.22$, SE = 0.09, $z = -2.40$, $p = .016$) associations both remained significant at $p < .05$, while the non-significant mindfulness-MC3 association was unchanged ($\beta = 0.11$, SE = 0.09, $z = 1.24$, $p = .213$). Similarity itself was a significant independent predictor of MC3 in all three models (all ps < .03).

Goal Setting Questionnaire (Session 1)

> For this task, we ask that you think of 4 goals you would like to complete within the next 10 days. For each goal, please list your goal briefly, and then describe your reasoning or motivations for your goal in more detail in the space provided. Then, use the rating scales to answer questions about each goal.
>
> ***Note**:* Participants saw/completed the same questionnaire for all four goals.

Goal 1:

1. Please describe in at least three sentences why you would like to achieve your first goal.

2. How important is it to you that you move towards this goal?
    a. Hardly At All

b. A Little
c. Somewhat
d. Quite a Bit
e. Very Much So

3. How important is it to another person or other people that you move toward this goal?
    a. Hardly At All
    b. A Little
    c. Somewhat
    d. Quite a Bit
    e. Very Much So

4. How vivid is your mental imagery when you think about completing this goal?
    a. Perfectly clear and vivid as normal vision
    b. Clear and reasonably vivid
    c. Moderately clear and vivid
    d. Vague and dim
    e. No image at all; you only know you are thinking of the goal

5. To what degree does your goal focus on achieving a desirable outcome?
    a. Hardly At All
    b. A Little
    c. Somewhat
    d. Quite a Bit
    e. Very Much So

6. To what degree does your goal focus on avoiding an undesirable outcome?
    a. Hardly At All
    b. A Little
    c. Somewhat
    d. Quite a Bit
    e. Very Much So

7. How similar is this goal to goals you set for yourself in the past?
    a. Not Similar at At All
    b. A Little Similar
    c. Somewhat Similar
    d. Quite a Bit Similar
    e. Very Similar

Goal Attainment Follow-Up (Session 2)

Below is a list of the 4 goals you wrote out in the previous session. Please answer the following questions for each of those goals.

GOAL 1: [goal1 shown]
GOAL 2: [goal2 shown]
GOAL 3: [goal3 shown]
GOAL 4: [goal4 shown]

1. How far do you think you progressed towards your FIRST goal?
    a. Not at all / I made no progress
    b. Started to work towards my goal and/or made very little progress
    c. Made some progress
    d. Made lots of progress and almost accomplished the goal
    e. Accomplished my goal

2. How far do you think you progressed towards your SECOND goal?
    a. Not at all / I made no progress
    b. Started to work towards my goal and/or made very little progress
    c. Made some progress
    d. Made lots of progress and almost accomplished the goal
    e. Accomplished my goal

3. How far do you think you progressed towards your THIRD goal?
    a. Not at all / I made no progress
    b. Started to work towards my goal and/or made very little progress
    c. Made some progress
    d. Made lots of progress and almost accomplished the goal
    e. Accomplished my goal

4. How far do you think you progressed towards your FOURTH goal?
    a. Not at all / I made no progress
    b. Started to work towards my goal and/or made very little progress
    c. Made some progress
    d. Made lots of progress and almost accomplished the goal
    e. Accomplished my goal

GOAL 1: [goal 1-4 shown]

1. To what degree did you have a plan or strategy in place to move towards your first goal?
    a. Hardly At All
    b. A Little
    c. Somewhat
    d. Quite a Bit
    e. Very Much So

2. In a few sentences, please describe any plans you set for yourself or strategies you used to help you reach your first goal.

3. Did you receive any emotional or social support to reach your first goal?
    a. Yes
    b. No

4. Who did you receive support from? (Check all that apply)
    a. Significant other/spouse
    b. Family relative
    c. Friend
    d. Coworker or employer
    e. Stranger
    f. Other
5. Who is this other person?

6. To what degree do you wish you had moved closer toward your first goal than you actually did?
    a. Hardly At All
    b. A Little
    c. Somewhat
    d. Quite a Bit
    e. Very Much So

Part II: Mental Contrasting Coding

Data Preparation and Thought Partitioning

Audio files were first transcribed, and three trained independent raters partitioned each transcript into individual thoughts separated by strong or associative transitions. Thoughts separated by a *strong transition* demonstrated no obvious content relationship with each other and the transition felt abrupt. *Associative transitions* occurred when two thoughts were related in some aspect of content, but nonetheless pertained to different overarching themes. However, thought transitions were analyzed jointly across our studies.

The resulting verbal material for Study 1 (n = 2,231 individual thoughts) and Study 2 (n = 1,723 individual thoughts) were subsequently coded for spontaneous engagement in mental contrasting as outlined below.

Coding Scheme Overview

To quantify the depth of goal-related processing in naturally occurring thought, we developed a four-level hierarchical coding scheme (MC0-MC3) applying the constructs of Fantasy Realization Theory[7,8,9] to unprompted streams of thought. Levels are incremental and mutually exclusive: higher levels imply all elements of lower levels, whether explicitly stated or not. Each thought unit receives the score corresponding to the highest level reached. These levels reflect qualitatively distinct modes of goal-related thought; we therefore examined the proportion of thoughts at each level.

Level Descriptions

MC Level 0 - Non-Goal Thought. The baseline category encompasses thought content containing no mention of a goal or desired future state. A thought is coded MC0 when it demonstrates no assertion of intentionality to engage in goal-related behavior. This includes observations about the immediate environment, memories without goal relevance, abstract

reflections, bodily sensations, or stream-of-consciousness content unconnected to goal pursuit. Future-oriented thoughts are only excluded from MC0 if they involve personal agency; thoughts describing futures outside one's control (e.g., "The weather will be nice tomorrow") are coded MC0.

MC Level 1 - Indulging (Wish). This level captures thoughts that identify, reference, or elaborate upon a goal the individual would like to achieve, without mentioning potential obstacles or concrete steps toward reaching it. Goals may be approach-oriented (e.g., "I want to go to the beach") or avoidance-oriented (e.g., "I never want to forget my towel at the beach again"). The defining feature is the presence of a wish or desired state combined with the absence of any consideration of barriers or actionable plans. This corresponds to the indulging mode in Fantasy Realization Theory.

MC Level 2 - Dwelling (Obstacle). Thoughts at this level express one or more obstacles that must be overcome in order to achieve a specified goal or avoid a non-preferred outcome. Obstacles may include barriers, anxieties, limits, negative emotional states, personality traits, or third parties that obstruct goal attainment (e.g., "I want to go to the beach, but I don't have any more vacation days"). Critically, no endorsed solution, strategy, or pathway forward is identified. MC2 thoughts commonly end in tentative statements that signal incomplete resolution: "But it's whatever," "I don't know," or "There's nothing we can really do about it." If a solution is mentioned tentatively, immediately contradicted, or negated by incompatible alternatives, the thought remains MC2.

MC Level 3 - Mental Contrasting (Solutions bridging reality and wish). The highest level represents fully integrated mental contrasting, where a thought culminates in specific, endorsed solution(s) for overcoming the identified obstacle(s) so that the desired future may be achieved (e.g., "I want to go to the beach, but I don't have any more vacation days. If I plan something over Labor Day weekend, that should work"). Within MC3 thoughts, obstacles may be implicit: when an individual describes specific actions they intend to engage in toward a goal, the presence of obstacles is evidently implied by the need to plan. The defining feature is a concrete, specific, non-contradicted solution that bridges present reality and desired future.

Table S1
Mental Contrasting Coding Criteria and Examples

Level	Label & Criteria	Key Features	Example
0	Non-Goal Thought. No mention of a goal or desired future state; no assertion of intentional goal-directed behavior.	Observations, memories without goal relevance, bodily sensations, futures outside personal control.	"Not a cloud in the sky today."
1	Indulging (Wish). A goal is identified without mention of obstacles or concrete steps.	Approach or avoidance goals;	"I really want a garden so I can grow my own veggies."

Level	Label & Criteria	Key Features	Example
		absence of barriers or plans.	
2	Dwelling (Obstacle). One or more obstacles expressed; no endorsed solution identified.	Barriers, anxieties, limits; thoughts trail off without resolution. Tentative or contradicted solutions remain MC2.	"It'd be nice to have a hobby but I'm usually too tired after work."
3	Mental Contrasting (Planning). A specific, endorsed solution bridges the identified obstacle and the desired goal.	Concrete plan; obstacle may be implicit if planning implies its presence. Solution is not contradicted.	"I really want to get in shape but there's a lot on my plate already…I could wake up 30 min earlier and do a quick workout."

Note. MC = Mental Contrasting. Levels are incremental: a higher level implies the elements of all lower levels, whether stated or implied.

Inter-Rater Reliability

Inter-rater reliability (IRR) was assessed using multiple indices appropriate for ordinal rating scales with two raters, using the irr[10] and psych[11] packages.

Study 1. The weighted Cohen's kappa was $\kappa w = 0.804$ ($z = 38.78$, $p < .001$), indicating "Substantial" inter-rater agreement[12]. The unweighted kappa was 0.697. The Intraclass Correlation Coefficient (ICC; two-way random effects, absolute agreement) was 0.77 (95% CI [0.737, 0.794], $F(2230, 2230) = 7.94$, $p < .001$), indicating good reliability[13].

Study 2. The weighted kappa was $\kappa w = 0.886$ ($z = 36.80$, $p < .001$), indicating "Almost Perfect" agreement[12]. The unweighted kappa was 0.820. The ICC was 0.886 (95% CI [0.876, 0.896], $F(1722, 1722) = 16.60$, $p < .001$), indicating excellent reliability[13].

Part III: Supplemental Analyses

S1. Pre-Registered Hypothesis Tests (H1-H8)

Assumption Checks

Prior to primary analyses, statistical assumptions were verified using Shapiro-Wilk's test and Levene's test. MC3 violated normality ($W = 0.869$, $p < .001$) with homogeneous variances (Levene's $F(1, 93) = 2.13$, $p = .147$). MC2 similarly violated normality ($W = 0.826$, $p < .001$) with homogeneous variances ($F(1, 93) = 2.34$, $p = .129$). Goal progress showed a marginal normality violation ($W = 0.972$, $p = .042$) with perfectly homogeneous variances. Goals accomplished

violated normality ($W = 0.868$, $p < .001$) with homogeneous variances ($F(1, 93) = 0.62$, $p = .430$). Given consistent normality violations for MC outcomes, all primary analyses used robust linear regression as the preregistered correction.

H1: Trait Mindfulness → MC3 - *NOT CONFIRMED*

Higher trait mindfulness did not significantly predict MC3 when age was controlled ($\beta = 0.04$, SE = 0.10, $z = 0.44$, $p = .657$), nor without age control ($\beta = 0.11$, $p = .257$). Meta-analytic pooling confirmed a consistent positive association across studies ($r = .20$, 95% CI [.05, .35]; S6), and the absence of a significant Age × Mindfulness interaction indicates attenuation suggests reduced power rather than non-replication.

H2: Depression → MC3 - *PARTIALLY CONFIRMED*

Depression significantly predicted lower MC3 without age control ($\beta = -0.22$, SE = 0.09, $z = -2.36$, $p = .018$), replicating Study 1. With age control, the effect attenuated to marginal significance ($\beta = -0.18$, SE = 0.10, $z = -1.71$, $p = .086$), reflecting shared age-depression variance. Pooled $r = -.27$ (95% CI [-.41, -.13]).

H3: Anxiety → MC3 and MC2 - *PARTIALLY CONFIRMED*

Anxiety significantly predicted lower MC3 without age control ($\beta = -0.21$, SE = 0.09, $z = -2.33$, $p = .020$), replicating Study 1, and attenuated to marginal significance with age control ($\beta = -0.17$, SE = 0.10, $z = -1.76$, $p = .078$). The predicted positive anxiety-MC2 association was not confirmed (ps > .20 in both studies).

H4: MC3 → Goal Progress - *NOT CONFIRMED (preregistered); CONFIRMED (exploratory)*

MC3 as a proportion of all thoughts did not significantly predict goal progress ($\beta = 0.09$, $p = .397$) or accomplishment ($p = .440$). Exploratory goal-thoughts-only analyses found significant positive associations: progress ($\beta = 0.25$, $p = .006$), accomplishment ($\beta = 0.34$, $p = .006$), both strengthening with age control. This deviation from preregistration is noted.

H5: Well-Being → Goal Progress - *PARTIALLY CONFIRMED*

Depression significantly predicted lower goal progress ($\beta = -0.22$, $p = .021$) and remained significant in the joint model ($\beta = -0.26$, $p = .037$). Anxiety and mindfulness did not significantly predict progress. In exploratory analyses, depression ($\beta = -0.31$, $p = .008$) and mindfulness ($\beta = 0.29$, $p = .018$) significantly predicted goals accomplished.

H6: MC3 Mediates Well-Being → Goal Progress - *NOT CONFIRMED*

Mediation condition (c) was not met: MC3 **across all thoughts** did not significantly predict goal progress ($p = .397$). The indirect effect of depression through MC3 was non-significant (ACME = -0.011, $p = .524$). The direct PHQ → progress effect was robust and unmediated.

H7: Older Adults > MC3 - *CONFIRMED*

Robust regression confirmed that older adults produced a significantly higher proportion of MC3 thoughts ($\beta = 0.40$, SE = 0.19, $z = 2.07$, $p = .039$; OA M = 16.0%, YA M = 10.5%).

H8: Older Adults > Goal Progress - *NOT CONFIRMED*

Younger and older adults showed equivalent goal progress (t(91.32) = 0.33, p = .741) and accomplishment (t(89.1) = 0.53, p = .600). Despite more MC3, older adults did not achieve superior outcomes, suggesting multiple pathways to goal attainment across the lifespan.

S2. Collinearity Between Depression and Anxiety Symptoms

We examined whether depression and anxiety independently predicted MC levels when entered simultaneously and constructed a distress composite for sensitivity analyses in both studies.

Study 1

PHQ-GAD Collinearity. Depression and anxiety were substantially correlated in Study 1 (r = .634, $p < .001$), sharing approximately 40.2% of their variance - nearly identical to Study 2 (r = .619). This degree of overlap is consistent with well-established symptom comorbidity in community samples.

Joint Models - MC3. When depression and anxiety were entered simultaneously, PHQ-9 no longer significantly predicted MC3 (β = -0.054, SE = 0.082, p = .506), while GAD-7 retained significance (β = -0.171, SE = 0.082, p = .036). When mindfulness was additionally included, neither depression (β = 0.041, p = .580) nor anxiety (β = -0.109, p = .138) reached significance, while mindfulness remained a strong and robust predictor (β = 0.248, SE = 0.065, $p < .001$).

Distress Composite - MC3. The composite distress variable (mean of z-scored PHQ and GAD) significantly predicted lower MC3 (β = -0.216, SE = 0.063, p = .001). This provides further evidence that the depression and anxiety effects on MC3 reflect a shared distress dimension rather than construct-specific mechanisms.

MC2 Models. Neither depression nor anxiety individually or jointly predicted MC2 in Study 1 (all ps > .47), and the distress composite was non-significant (β = 0.102, p = .231). Mindfulness, however, significantly predicted fewer MC2 thoughts both individually (β = -0.214, p = .008) and in the joint model (β = -0.237, p = .020), replicating the primary finding. MC1 and MC0 showed no significant associations with any predictor in joint models (all ps > .39).

The pattern across Study 1 joint demonstrates that depression and anxiety share substantial variance and neither uniquely dominates the MC3 association when modeled together. Mindfulness is the most robust independent predictor of MC3 in Study 1, surviving all joint models.

Study 2

Depression (PHQ-9) and anxiety (GAD-7/DSM-5 Anxiety subscale) symptoms were substantially correlated across both studies (Study 2 full sample: r = .619, p < .001), sharing approximately 38.3% of their variance.

Joint Models

Both predictors were entered simultaneously into a joint robust regression model predicting MC3. The overall model reached significance ($F(2, 92) = 3.32$, $p = .041$, $R^2 = .067$, adjusted $R^2 = .047$). However, when variance was partitioned between predictors, neither PHQ-9 ($\beta = -0.61$, $SE = 0.48$, $t = -1.27$, $p = .206$) nor anxiety ($\beta = -0.35$, $SE = 0.36$, $t = -0.97$, $p = .334$) reached individual significance, a pattern characteristic of multicollinearity, where shared predictor variance reduces the precision with which effects can be attributed to either construct specifically.

Distress Composite - MC3. The composite distress variable significantly predicted lower MC3 ($\beta = -0.259$, $SE = 0.099$, $z = -2.61$, $p = .009$), consistent with Study 1 ($\beta = -0.216$, $p = .001$). The distress composite significantly predicted greater MC2 without age control ($\beta = 0.187$, $SE = 0.091$, $z = 2.06$, $p = .039$). With age included, the composite no longer reached significance ($\beta = 0.154$, $SE = 0.098$, $z = 1.57$, $p = .117$), and age group itself was non-significant ($\beta = -0.160$, $p = .363$). The distress composite did not significantly predict MC1 ($\beta = -0.038$, $SE = 0.115$, $z = -0.33$, $p = .742$), paralleling the null Study 1 result.

Goal Progress and Accomplishment. The composite predicted lower goal progress at a marginal level with age control ($\beta = -0.19$, $SE = 0.12$, $z = -1.66$, $p = .098$) compared to the significant PHQ effect ($\beta = -0.22$, $p = .021$), and significantly predicted fewer goals accomplished ($\beta = -0.32$, $SE = 0.14$, $z = -2.37$, $p = .018$).

Sensitivity Analyses

To assess whether these patterns were driven by outliers in the MC3 distribution, we replicated the joint model in a sample restricted to participants below the 3SD outlier threshold for MC3 (≤ 0.50, $n = 93$). Results were broadly consistent: the overall model remained significant ($F(2, 90) = 4.10$, $p = .020$, $R^2 = .083$), PHQ-9 remained non-significant ($\beta = -0.32$, $SE = 0.48$, $t = -0.67$, $p = .508$), and anxiety showed a marginal trend ($\beta = -0.64$, $SE = 0.37$, $t = -1.75$, $p = .083$). For MC2, the joint model was marginal in the full sample ($F(2, 92) = 2.57$, $p = .082$), with PHQ showing a positive but non-significant trend ($\beta = 0.78$, $SE = 0.48$, $t = 1.60$, $p = .113$). In the outlier-filtered sample ($MC2 \leq 0.40$, $n = 93$), PHQ's positive association with MC2 approached significance ($\beta = 0.91$, $SE = 0.49$, $t = 1.87$, $p = .064$), suggesting depression may carry a unique positive association with dwelling-type goal cognition independent of anxiety, though this warrants replication. For MC1, neither predictor nor the overall model reached significance in either sample (all $ps > .10$).

Taken together, the distress composite confirms a consistent shared-distress signal across both studies. These results indicate that while depression and anxiety individually associate with spontaneous MC levels in the primary analyses, their effects are largely driven by what the two measures share, a general dimension of psychological distress or negative affect, rather than by mechanisms unique to either construct. Depression and anxiety are reported as separate predictors throughout the main text because they represent distinct, clinically relevant individual-difference measures with established clinical utility, not because they are assumed to operate through largely independent pathways. Future research using purer measures of unique depressive cognition (e.g., hopelessness, anhedonia) and unique anxiety cognition (e.g., threat sensitivity, intolerance of uncertainty) would help clarify whether these constructs diverge in their relationships with spontaneous goal elaboration when their shared variance is more cleanly separated.

S3. Between-Study Comparison of MC Level Distributions

Prior to primary analyses, we evaluated whether the baseline distribution of MC levels was comparable across studies. Overall goal-related thought proportions differed significantly, with Study 2 participants devoting more thought to goal-related content than Study 1 (36.8% vs. 24.1%, $t(169) = -4.66$, $p < .001$). This held when restricting to younger adults only (40.1% vs. 24.1%, $t(93.5) = -4.93$, $p < .001$), confirming the discrepancy cannot be attributed solely to the inclusion of older adults in Study 2.

MC1 (indulging) did not differ significantly between studies (Study 1: 15.6%, Study 2: 13.2%; $t(153) = 1.41$, $p = .160$; YA only: $p = .700$), suggesting simple goal-related fantasy was comparably frequent. MC2 (dwelling) was substantially higher in Study 2 (4.1% vs. 9.7%; $t(145) = -4.42$, $p < .001$; YA only: $p < .001$), as was MC3 (4.4% vs. 13.2%; $t(150) = -5.45$, $p < .001$; YA only: 10.5%, $p = .002$). These differences persisted in the younger-adult-only comparison, ruling out age composition as the primary explanation. Procedural context, particularly remote Zoom administration during the COVID-19 pandemic, likely contributed to elevated goal-related thinking in Study 2. Full proportions by study and age group are presented in Table S2.

Table S2

MC Level Proportions by Study and Age Group

			M (SD) - Proportion of Total Thoughts				
Study	**Group**	**n**	**Goal-Related**	**MC0 Non-Goal**	**MC1 Indulging**	**MC2 Dwelling**	**MC3 Contrasting**
Study 1	**Full Sample (YA)**	77	24.1% (16.6%)	75.9% (16.6%)	15.6% (12.0%)	4.1% (5.5%)	4.4% (7.3%)
Study 2	**Full Sample (YA + OA)**	95	36.8% (19.2%)	64.0% (19.1%)	13.2% (10.6%)	9.7% (10.8%)	13.2% (13.5%)
Study 2	**Younger Adults Only**	49	40.1% (18.6%)	63.0% (18.9%)	14.8% (10.9%)	11.6% (12.1%)	10.5% (12.0%)
Study 2	**Older Adults Only**	46	33.2% (19.4%)	65.1% (19.5%)	11.4% (10.1%)	7.6% (8.7%)	16.0% (14.5%)

Note. Values represent M (SD) percentage of total thoughts at each MC level. MC0 = non-goal thoughts; MC1 = indulging; MC2 = dwelling; MC3 = mental contrasting. Study 1 consisted of younger adults only (n = 77). Study 2 included younger and older adults (n = 95). The MC3 column is highlighted to draw attention to the notable between-study difference. Between-study significance tests are reported in the main text.

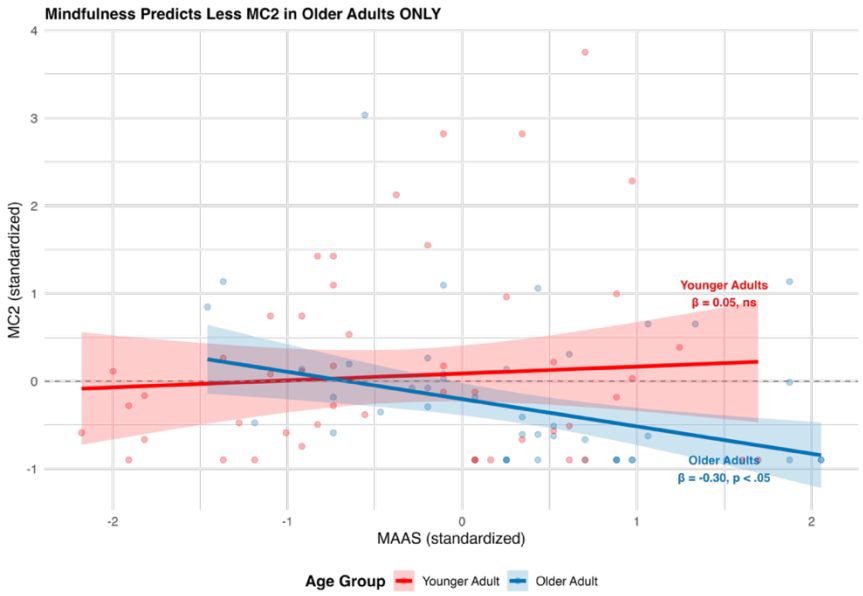
S4. Age × Well-Being Interaction Models

To examine whether well-being-MC associations differed by age group, we estimated robust linear regression models with each well-being predictor, age group, and their interaction term as predictors of each MC level (MC0-MC3). Simple slopes were computed for significant interactions using the emmeans package[14].

MC3. No significant Age × Well-Being interactions emerged for MC3 (all ps > .70), confirming that well-being-MC3 associations do not differ significantly between younger and older adults.

MC2. A significant interaction emerged for mindfulness predicting MC2 (MAAS × Age: β = -0.35, SE = 0.17, z = -2.04, p = .042). Simple slopes indicated that among younger adults, mindfulness was unrelated to MC2 (β = 0.05, SE = 0.11, 95% CI [-0.17, 0.27]), whereas among older adults, higher mindfulness was associated with significantly fewer dwelling thoughts (β = -0.30, SE = 0.13, 95% CI [-0.56, -0.04]; Fig S1).

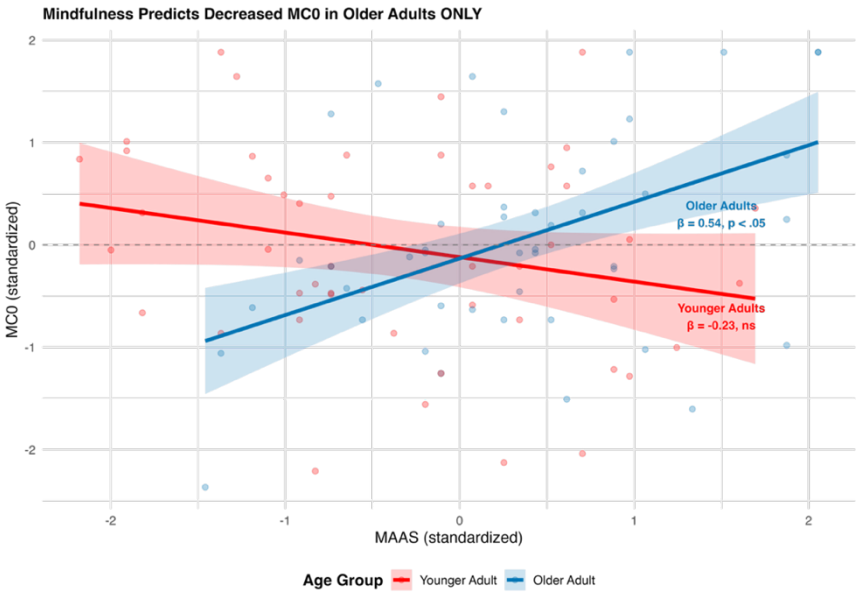
Fig S1: MAAS × Age Group interaction predicting MC2



MC1. No significant Age × Well-Being interactions emerged for MC1 (all ps > .13).

MC0. A significant Age × Mindfulness interaction emerged for non-goal thoughts (MAAS × Age: β = 0.78, SE = 0.22, z = 3.58, p < .001). Simple slopes revealed a significant positive association in older adults (β = 0.54, SE = 0.16, 95% CI [0.22, 0.86]) and a negative, non-significant association in younger adults (β = -0.23, SE = 0.14, 95% CI [-0.51, 0.04]; Fig S2), suggesting highly mindful older adults may shift away from goal-related cognition during rest.

Fig S2: MAAS × Age Group interaction predicting MC0



S4b. Secondary MC Level Associations with Well-Being (Study 2)

Beyond the primary MC3 outcome, exploratory analyses examined whether depression, anxiety, and mindfulness predicted dwelling (MC2) and indulging (MC1) thoughts. Higher depression predicted a greater proportion of MC2 dwelling thoughts (β = 0.20, *SE* = 0.08, *z* = 2.41, *p* = .016) and marginally fewer MC1 indulging thoughts (β = -0.19, *SE*= 0.10, *z* = -1.89, *p* = .059). Neither anxiety nor mindfulness significantly predicted MC2 or MC1 (all *p*s > .13). The depression-MC2 association is consistent with clinical characterizations of depression as involving rumination on obstacles without constructive resolution and extends the primary findings by suggesting that depression is associated not only with less complete goal elaboration but with active dwelling on obstacles specifically. Full results across all MC levels and predictors are presented in Supplemental Table S3. Sensitivity analyses using the distress composite (see S1b) closely mirrored these results, with the composite significantly predicting lower MC3 (β = -0.26, *p* = .009) and greater MC2 (β = 0.19, *p* = .039), supporting the interpretation that these effects reflect shared psychological distress rather than construct-specific mechanisms.

S5. Well-Being Within Goal-Oriented Thoughts Only (n = 89)

Our preregistration did not specify the operationalization of MC3 for the well-being analyses; because our primary operationalization throughout expresses MC levels as proportions of all thoughts, we treated this as the preregistered default. However, this potentially conflates two distinct aspects of goal-related thinking: (1) how much someone thinks about their goals at all, and (2) how deeply they elaborate on those goals when they do. As a secondary operationalization, we examined whether well-being associations held when MC levels were expressed as proportions of goal-related thoughts only (MC3 /

MC1+MC2+MC3), restricting analyses to participants who produced at least one goal-related thought. This operationalization indexes the depth of elaboration within goal thinking specifically, independent of how frequently goal-related thoughts occur overall.

Results

In Study 1, among the 72 participants with at least one goal thought (5 excluded for zero goal thoughts), the goals-only operationalization produced significant well-being effects for all three predictors: depression (β = -0.25, *SE* = 0.12, *p* = .031), anxiety (β = -0.29, *SE* = 0.11, *p* = .009), and mindfulness (β = 0.62, *SE* = 0.08, *p* < .001). Effect sizes were comparable to or larger than the corresponding all-thoughts models, confirming that the goals-only operationalization is sensitive to well-being effects when adequate power is available and no age-related variance is present.

Among the 89 participants with at least one goal thought, MC levels within goal cognition were roughly equally distributed (MC1: 36.0%, *SD* = 25.9%; MC2: 28.9%, *SD* = 28.1%; MC3: 35.1%, *SD* = 29.2%; Fig S3). Age group differences within goal thoughts were non-significant (all *p*s > .38), in contrast to the significant overall MC3 difference in primary S2 analyses consistent with the interpretation that age differences in MC3 operate primarily at the level of how frequently complete goal elaboration enters the thought stream overall, rather than in the relative depth of elaboration once goal thinking has been initiated.

MC3 Within Goal Thoughts. The significant negative associations between depression and anxiety and overall MC3 (PHQ: β = -0.22, *p* = .018; ANX: β = -0.21, *p* = .020) attenuated to non-significance when restricted to goal thoughts: depression (β = -0.10, *SE* = 0.11, *z* = -0.94, *p* = .135), anxiety (β = -0.15, *SE* = 0.11, *z* = -1.46, *p* = .144), and mindfulness (β = 0.16, *SE* = 0.11, *z* = 1.46, *p* = .144). All remained non-significant when controlling for age (all *p*s > .25).

MC2 Within Goal Thoughts. The significant PHQ → MC2 association in primary analyses (β = 0.20, *p* = .016) attenuated to non-significance within goal thoughts (β = 0.10, *SE* = 0.10, *z* = 1.04, *p* = .300).

MC1 Within Goal Thoughts. Higher trait mindfulness was significantly associated with fewer indulging thoughts within goal cognition (β = -0.24, *SE* = 0.11, *z* = -2.22, *p* = .026), a finding not present in primary analyses, suggesting that mindful individuals spend proportionally less time in simple goal fantasy when they do think about their goals. This effect was not moderated by age (all interaction *p*s > .21) and attenuated when controlling for age (β = -0.16, *SE* = 0.15, *z* = -1.11, *p* = .270).

S5b. Exploratory power analyses into wellbeing and MC (goal-thoughts only) models.

To investigate whether the attenuation of wellbeing effects when measuring goal-thoughts only reflects a genuine absence of the relationship or a statistical artifact, we conducted a formal power analysis using Study 1 effect sizes as the best available estimate of true population effects. Converting standardized beta coefficients to correlations, Study 1

yielded effect sizes of r = -.156 for depression, r = -.199 for anxiety, and r = .254 for mindfulness. At n = 95, Study 2 had only 32.9% power to detect the depression effect, 49.3% power for anxiety, and 70.7% for mindfulness, all below the conventional 80% threshold. To further validate the all-thoughts effects that did reach significance in Study 2, we computed bias-corrected and accelerated (BCa) bootstrap confidence intervals using 5,000 resamples. Bootstrap CIs excluded zero for both depression (BCa 95% CI: -0.41 to -0.06) and anxiety (BCa 95% CI: -0.40 to -0.07), confirming stability of these effects across resamples. The mindfulness CI crossed zero (BCa 95% CI: -0.08 to 0.32), consistent with its non-significant p-value and the power analysis indicating Study 2 was closest to adequately powered for this predictor. Together, these analyses suggest that the attenuation of goals-only effects in Study 2 is statistically expected given sample size constraints rather than reflecting a genuine absence of the relationship.

Table S4. Well-Being Predictors of Spontaneous MC Levels: All Thoughts vs. Goal-Related Thoughts Only

		Study 1 (n = 77 / 72)		Study 2 (n = 95 / 89)	
Outcome	**Predictor**	**All Thoughts**	**Goal Thoughts Only**	**All Thoughts**	**Goal Thoughts Only**
MC3 (Contrasting)	Depression (PHQ)	-0.158 (0.054)**	-0.248 (0.115)*	-0.217 (0.092)*	-0.102 (0.108)
	Anxiety (GAD/DSM-5)	-0.203 (0.058)***	-0.29 (0.111)**	-0.214 (0.092)*	-0.154 (0.106)
	Mindfulness (MAAS)	0.263 (0.052)***	0.62 (0.085)***	0.109 (0.096)	0.159 (0.109)
MC2 (Dwelling)	Depression (PHQ)	0.11 (0.078)	0.13 (0.069)†	0.20 (0.083)*	0.1 (0.097)
	Anxiety (GAD/DSM-5)	0.08 (0.078)	0.141 (0.071)	0.107 (0.085)	0.023 (0.099)
	Mindfulness (MAAS)	-0.214 (0.081)**	-0.269 (0.074)***	-0.125 (0.083)	0.002 (0.102)
MC1 (Indulging)	Depression (PHQ)	0.023 (0.114)	0.062 (0.108)	-0.102 (0.102)	-0.053 (0.106)
	Anxiety (GAD/DSM-5)	0.024 (0.116)	0.117 (0.112)	0.04 (0.105)	0.119 (0.115)
	Mindfulness (MAAS)	-0.072 (0.115)	-0.164 (0.106)	-0.11 (0.102)	-0.235 (0.106)*

Note. Values are β (SE). † p < .10, * p < .05, ** p < .01, *** p < .001. All-thoughts models express MC levels as proportion of total thoughts (MC0+MC1+MC2+MC3). Goal-thoughts-only models express MC levels as proportion of goal-related thoughts only (MC1+MC2+MC3). Study 1 n = 72 and Study 2 n = 89 for goals-only models after excluding participants with zero goal

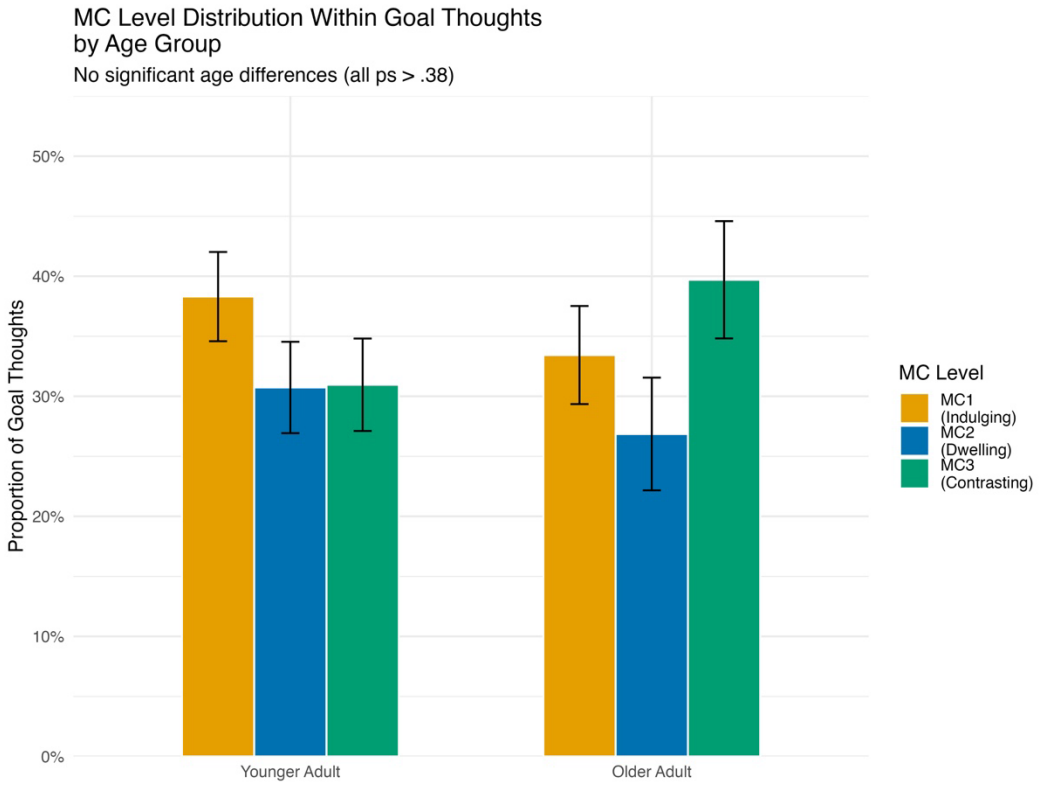
		Study 1 (n = 77 / 72)		Study 2 (n = 95 / 89)	
Outcome	**Predictor**	**All Thoughts**	**Goal Thoughts Only**	**All Thoughts**	**Goal Thoughts Only**

thoughts. Study 1 depression = PHQ-9 ; Study 1 anxiety = GAD-7 . Study 2 depression = PHQ-9 ; Study 2 anxiety = DSM-5 Anxiety subscale . Mindfulness = MAAS in both studies.

S6. Goal Progress and Accomplishment: All vs. Goal-Only Thoughts

On average, participants reported moderate goal progress (M = 3.44, SD = 0.83 on a 1-5 scale) and accomplished approximately 1.28 goals (SD = 1.17) over the 10-day period (Fig S3). Younger and older adults did not differ significantly on either outcome (progress: t(91.3) = 0.33, p = .740; accomplishment: t(89.1) = 0.53, p = .600).

Fig S3: MC Level Distribution within Goal-Only Thoughts by Age group



MC Levels as Proportions of All Thoughts

When MC levels were expressed as proportions of all thoughts, no MC level significantly predicted goal progress (all ps > .10). For goal accomplishment, a higher proportion of MC1 (indulging) thoughts significantly predicted fewer goals accomplished (β = -0.28, SE = 0.11, z = -2.47, p =

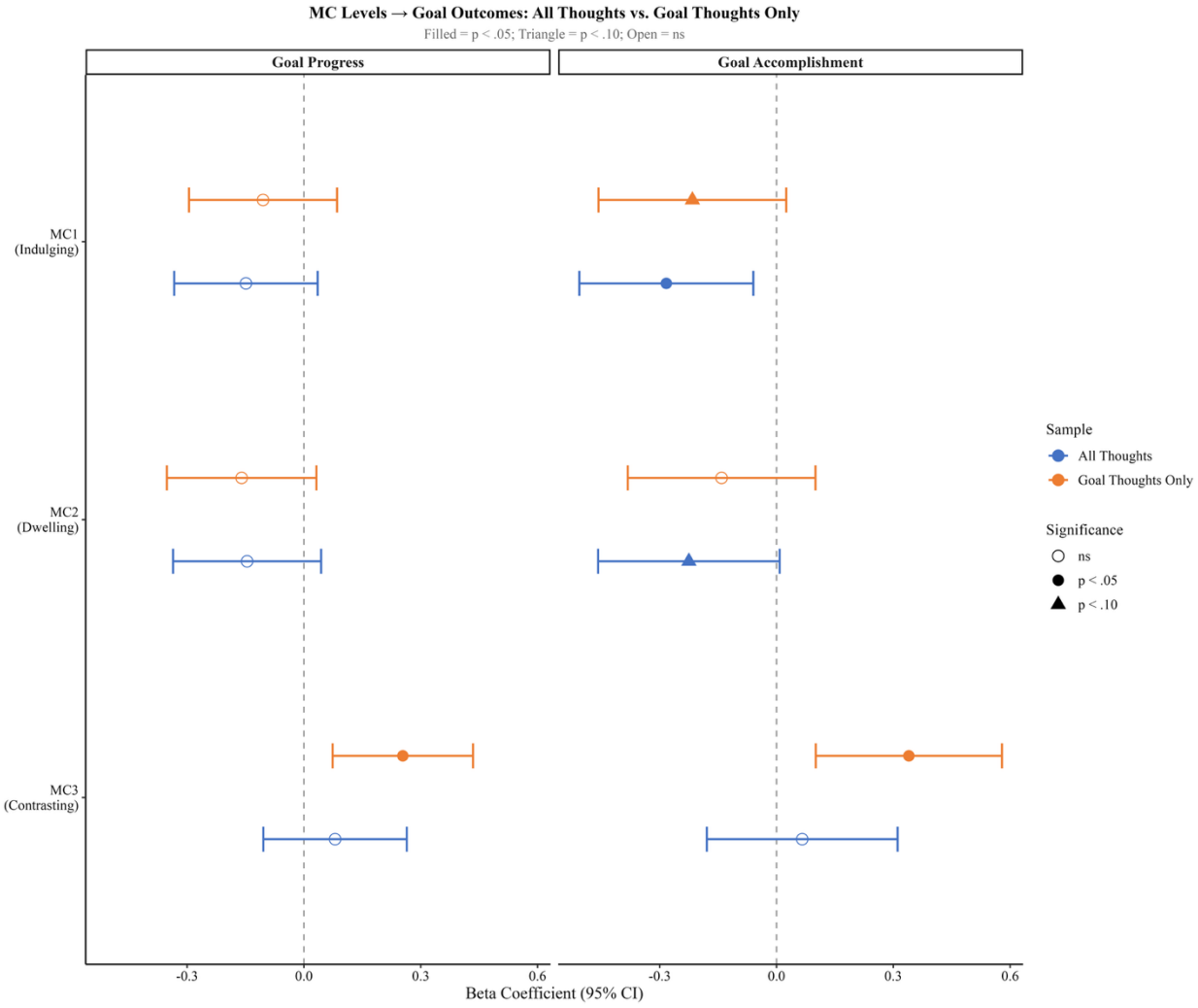
.014), strengthening when adding age as a covariate (β = -0.31, SE = 0.12, z = -2.64, p = .008). MC2 showed a marginal negative association with accomplishment (β = -0.23, SE = 0.12, z = -1.89, p = .059). MC3 as a proportion of all thoughts did not significantly predict accomplishment (p = .600). No significant Age × MC interactions emerged (all ps > .15).

MC Levels as Proportions of Goal-Related Thoughts Only

A distinct pattern emerged when MC was expressed as a proportion of goal-related thoughts only (Fig S4). MC3 within goal thoughts was a significant positive predictor of goal progress (β = 0.25, SE = 0.09, z = 2.78, p = .006), remaining significant when controlling for age (β = 0.26, SE = 0.09, z = 2.85, p = .004), and of goal accomplishment (β = 0.34, SE = 0.12, z = 2.79, p = .006), strengthening with age control (β = 0.37, SE = 0.12, z = 2.98, p = .003). No significant Age × MC interactions emerged (all ps > .28).

These findings reveal a theoretically meaningful dissociation. Across all resting thoughts, what predicts fewer goals accomplished is the presence of incomplete goal elaboration rather than the absence of mental contrasting per se. When analyses are restricted to goal-related thoughts, the quality of elaboration independently predicts success -consistent with Fantasy Realization Theory's core claim that it is not the frequency but the structure of goal-related thought that energizes committed pursuit[7].

Fig S4: MC3 within goal thoughts predicting goal progress and accomplishment



S7. Meta-Analytic Pooling of Well-Being-MC3 Associations

A key interpretive question arising from Study 2 concerns the attenuation of well-being-MC3 associations when age group is controlled. When age was included as a covariate, the negative associations between depression and MC3 ($\beta = -0.18$, $p = .086$) and between anxiety and MC3 ($\beta = -0.17$, $p = .078$) were reduced to marginal significance, and the positive association between mindfulness and MC3 became non-significant ($\beta = 0.04$, $p = .657$). Two interpretations of this pattern are possible: (1) the well-being-MC3 associations observed in Study 1 did not replicate in Study 2, with shared age-related variance accounting for what appeared to be well-being effects; or (2) the strong covariance between age and both well-being and MC3 in Study 2 reduces the statistical power available to detect within-group well-being effects, making attenuation an artifact of the study design rather than evidence of non-replication.

To distinguish between these interpretations, we conducted a fixed-effects meta-analysis pooling the well-being-MC3 Pearson correlations from Study 1 (n = 75) and Study 2 (n = 95) following established procedures for combining correlations within a manuscript[15]. All correlations were Fisher's z transformed prior to pooling and converted back to Pearson r for presentation. Fixed effects were chosen because the two studies share the same paradigm, participant recruitment context, and outcome measures, making a single underlying population effect size a reasonable assumption[16]. Between-study heterogeneity was tested using a z-test comparing the Fisher-transformed correlations across studies (see Formula 11 in ref 15); a non-significant result indicates that the two effect sizes are statistically equivalent and that observed differences are attributable to sampling variation rather than true between-study differences. Results are reported in Table S3 and Fig S6.

Depression-MC3. The pooled correlation was r = -.27 (95% CI [-.41, -.13]), indicating a consistent small-to-moderate negative association. Between-study heterogeneity was non-significant (z = -0.49, p = .624), confirming that the Study 1 and Study 2 depression-MC3 correlations are statistically equivalent.

Anxiety-MC3. The pooled correlation was r = -.24 (95% CI [-.38, -.09]). Between-study heterogeneity was non-significant (z = -0.26, p = .790), further supporting that anxiety's negative association with spontaneous mental contrasting replicates across samples.

Mindfulness-MC3. The pooled correlation was r = .20 (95% CI [.05, .35]). The between-study heterogeneity test approached significance (z = 1.96, p = .051), suggesting a marginally larger effect in Study 1 than Study 2. This is consistent with the hypothesis that the stronger mindfulness-MC3 association in Study 1 reflects the greater homogeneity of that younger sample, where age-related variance in mindfulness does not compete with well-being variance in predicting MC3. The pooled estimate nonetheless confirms a positive association across both studies.

Taken together, the meta-analytic results support the conclusion that well-being-MC3 associations are consistent and replicable across Study 1 and Study 2. The absence of significant between-study heterogeneity for depression and anxiety, and the significant pooled confidence intervals excluding zero for all three predictors, provide convergent evidence that these effects are genuine. The attenuation when controlling for age in Study 2 is best understood as a consequence of the strong shared variance between age and both well-being and MC3 in a mixed-age sample, reducing statistical precision for estimating independent well-being effects, rather than as evidence that these relationships are absent or non-replicable in older adults.

Table S3

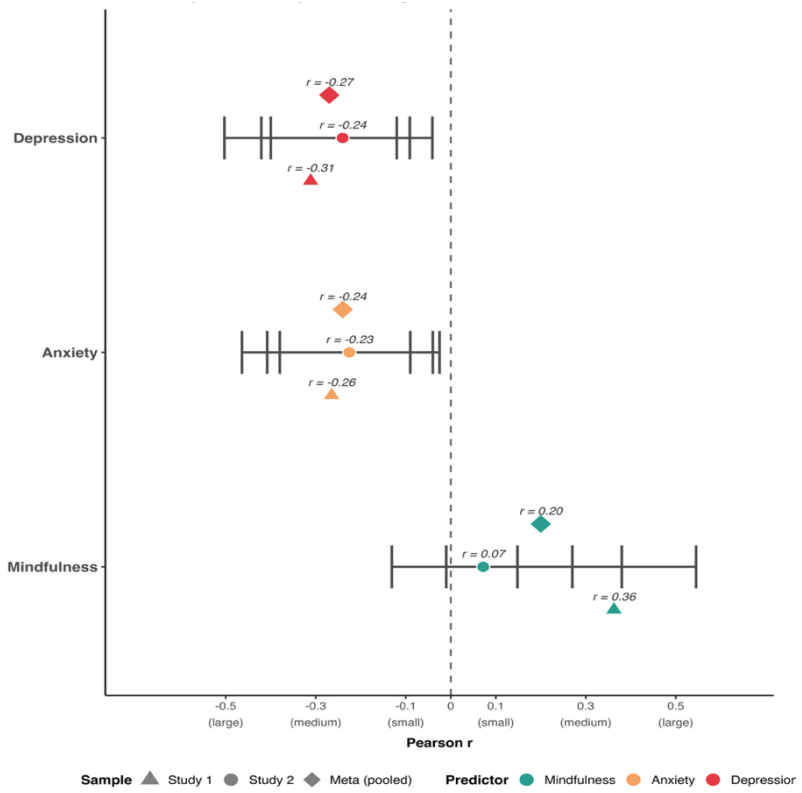
Meta-Analytic Pooling of Well-Being-MC3 Correlations Across Studies

Predictor	Study 1 r	Study 2 r	Pooled r	95% CI	z (het.)	p
Depression (PHQ)	-0.311	-0.240	-0.272	[-0.407, -0.125]	-0.489	.625
Anxiety (ANX)	-0.265	-0.226	-0.243	[-0.381, -0.095]	-0.264	.792

Mindfulness (MAAS)	0.363	0.072	0.205	[0.054, 0.346]	1.959	.050†

Note. Study-level correlations are Pearson r between each well-being predictor and proportion of MC3 thoughts. Pooled r and 95% CI computed using Fisher's z transformation with fixed-effects weighting by n - 3. z (het.) = test for between-study heterogeneity in effect sizes. Study 1 n = 75; Study 2 n = 95. PHQ = Patient Health Questionnaire-9; ANX = DSM-5 Anxiety subscale; MAAS = Mindful Attention Awareness Scale. † p < .10.

Fig S6. *Meta-Analytic Summary of Well-Being-MC3 Correlations Across Studies*



S8. Well-Being, Goal Progress, and Mediation (Hypotheses 5-6)

Hypothesis 5: Well-Being → Goal Progress

Three separate robust regression models examined whether depression, anxiety, and mindfulness each predicted mean goal progress over the 10-day period, with age group as a covariate. Higher depressive symptoms significantly predicted lower goal progress (β = -0.22, SE = 0.10, z = -2.30, p = .021), consistent with Hypothesis 5. Anxiety (β = -0.09, SE = 0.10, z = -0.82, p = .413) and mindfulness (β = 0.09, SE = 0.10, z = 0.97, p = .333) did not significantly predict goal progress. As preregistered, a joint model was run given the significant PHQ result; depression remained significant (β = -0.26, SE = 0.12, z = -2.08, p = .037) while anxiety and mindfulness remained non-significant (both ps > .58). In exploratory analyses extending the outcome to goals

accomplished, depression (β = -0.31, SE = 0.12, z = -2.63, p = .008) and mindfulness (β = 0.29, SE = 0.12, z = 2.37, p = .018) were both significant predictors, while anxiety was not (p = .112).

Hypothesis 6: Mediation

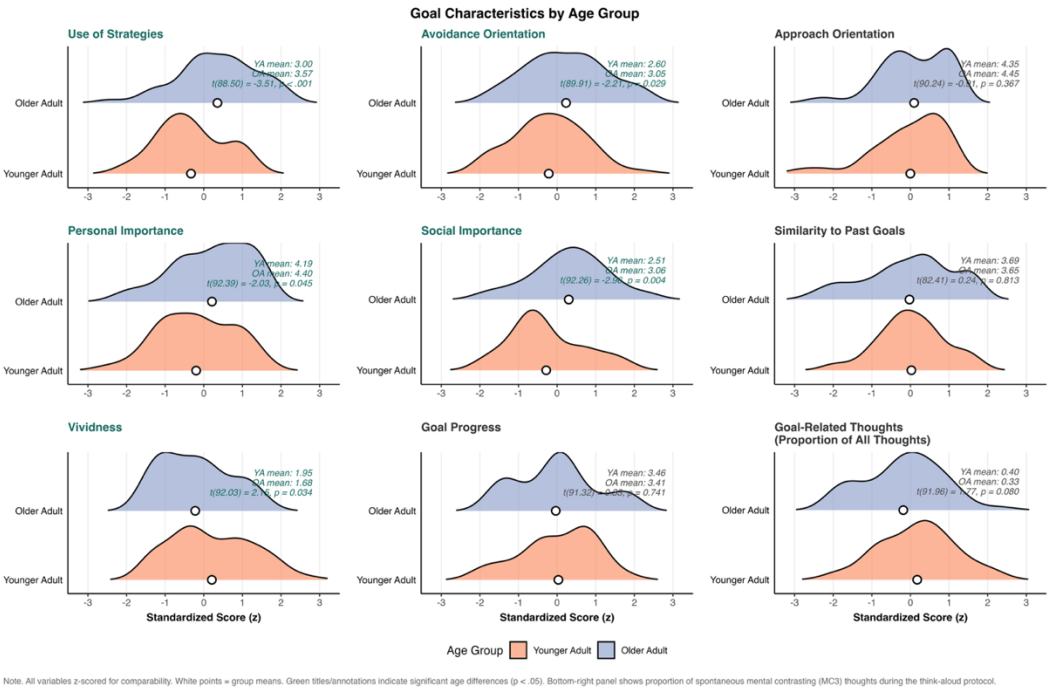
Mediation analyses required three conditions: (a) well-being predicting MC3, (b) well-being predicting goal progress, and (c) MC3 predicting goal progress. Conditions (a) and (b) were met for depression; condition (c) was not met, as MC3 as a proportion of all thoughts did not significantly predict goal progress (p = .397). Mediation models were nonetheless run for completeness using 1,000 quasi-Bayesian simulations. For the depression pathway, the indirect effect through MC3 was non-significant (ACME = -0.011, 95% CI [-0.052, 0.024], p = .524), the direct effect was significant (ADE = -0.210, 95% CI [-0.380, -0.026], p = .024), and the proportion mediated was negligible (3.9%). For anxiety and mindfulness, neither indirect nor direct effects were significant (all ps > .29 and > .36 respectively). The depression-goal progress relationship is direct and unmediated by spontaneous MC3 in the current design.

S9. Age Differences in Goal Characteristics (Study 2)

Exploratory analyses examined descriptive features of participants' four self-generated goals using independent-samples *t*-tests. These non-preregistered analyses revealed significant age differences in goal characteristics that contextualize the spontaneous thought patterns observed during the TAP (Fig S7).

Older adults reported a significantly higher degree of incorporating a concrete strategy or plan toward their goals (*M*[OA] = 3.57, *M*[YA] = 3.00; *t*(89) = -3.51, *p* < .001), consistent with their higher spontaneous MC3 production. Older adults also reported greater perceived goal importance to others (*M*[OA] = 3.06, *M*[YA] = 2.51; *t*(92) = -2.96, *p* = .004) and to themselves (*M*[OA] = 4.40, *M*[YA] = 4.19; *t*(92.39) = -2.03, *p* = .045). Older adults reported more avoidance-framed goals (*M*[OA] = 3.05, *M*[YA] = 2.60; *t*(89) = -2.21, *p* = .029), consistent with SST's prediction that older adults prioritize avoiding negative outcomes, while no age difference emerged for approach framing (*M*[OA] = 4.45, *M*[YA] = 4.35; *p* = .367). Younger adults reported significantly more vivid goal imagery (*M*[YA] = 1.95, *M*[OA] = 1.68; *t*(92.03) = 2.15, *p* = .034), suggesting younger adults may rely more heavily on imaginative simulation in goal motivation. No significant age differences emerged for similarity to past goals or goal progress (all *p*s > .74; Fig S7).

Fig S7.



Note. All variables z-scored for comparability. White points = group means. Green titles/annotations indicate significant age differences ($p < .05$). Bottom-right panel shows proportion of spontaneous mental contrasting (MC3) thoughts during the think-aloud protocol.

Additional Tables

Table S5. Participant Demographics by Study

Characteristic	Study 1 (N = 77)	Study 2 (N = 95)
Gender		
Female	43 (55.8%)	67 (70.5%)
Male	33 (42.9%)	28 (29.5%)
Non-binary	1 (1.3%)	—
Declined to report	—	—
Age		
Range	17-28 years	18-83 years
M (SD)	19.53 (2.34)	YA: 22.7; OA: 69.7
Race/Ethnicity		
Non-Hispanic White	45.5% (n = 35)	73.7% (n = 70)
Asian/Asian American	10.3% (n = 8)	4.2% (n = 4)
Latine/Hispanic	32.5% (n = 25)	13.7% (n = 13)
Black/African American	2.6% (n = 2)	3.2% (n = 3)
Multiracial/Other	5.2% (n = 4)	2.1% (n = 2)

Characteristic	Study 1 (N = 77)	Study 2 (N = 95)
Am. Indian/Alaska Native	1.3% (n = 1)	1.1% (n = 1)
Native Hawaiian/Pac. Islander	1.3% (n = 1)	—
Preferred not to respond	1.3% (n = 1)	2.1% (n = 2)

Note. YA = Younger Adults; OA = Older Adults. Study 1 data collected 2019-2020; Study 2 data collected 2020-2021 via Zoom Health. Study 2 participants overlap with Stoica et al. [4]; different variables were analyzed in that paper.

Table S6. Well-Being Measure Descriptives by Study and Age Group (Study 2)

	Study 1 (N = 77)	Study 2 (N = 95)			YA vs. OA		
Measure	Full Sample M (SD)	Full Sample M (SD)	Younger Adults M (SD)	Older Adults M (SD)	t	df	p
Depression (PHQ-9)	4.96 (4.32)	12.91 (4.21)	13.8 (4.18)	11.96 (4.06)	2.17	92.9	0.032
Anxiety (GAD-7 / DSM-5)	4.80 (4.45)	5.09 (2.41)	5.88 (2.74)	4.26 (1.67)	3.50	80.0	0.001
Mindfulness (MAAS)	4.04 (0.84)	4.28 (0.74)	4.03 (0.74)	4.54 (0.66)	-3.54	92.7	0.001

Note. M = mean; SD = standard deviation. Study 1 anxiety assessed via GAD-7; Study 2 anxiety assessed via DSM-5 Self-Rated Level 1 Cross-Cutting Symptom Measure Anxiety subscale (4-item, range 0–16). t and p values reflect Welch two-sample t-tests comparing younger and older adults in Study 2. * $p < .05$, ** $p < .01$, *** $p < .001$.

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