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Crafting solitude: an intentional approach to solitude in emerging adults' everyday life

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ABSTRACT

Solitude is often stigmatized, yet research suggests intentional time alone can be beneficial. This research tests "Solitude Crafting," a novel two-part intervention to reshape emerging adults' experiences by de-stigmatizing solitude and guiding meaningful solitary activities. Pilot study ($N = 120$) assessed the intervention's feasibility and impact over five days. The full study ($N = 75$) tested the intervention, examining Solitude Crafting alongside a comparison time point in a staggered, within-subject design. Results indicated post-intervention improvements in emotional well-being, with participants attributing these benefits to the intervention. Our findings present Solitude Crafting as a promising avenue for reframing attitudes toward solitude and enhancing well-being when alone.

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Solitude, time spent alone and not interacting with others, is an important and familiar context of daily life. On average, adults spend between 2 to 6 hours per day alone (TNguyen et al., 2023), and this figure appears to be on an upward trajectory, at least in Western cultures (Snell, 2017). Although commonplace, solitude is broadly stigmatized in social discourse (Vincent, 2020) and research findings evidence its potentially detrimental effects, including feelings of loneliness, perceived stress (Wilson et al., 2014), and reduced happiness (Nguyen et al., 2018). However, solitude can also free individuals from undesired social contexts, such as when social networks are conflictual, and in doing so alleviate negative mood (Birditt et al., 2019). More so, solitude can contribute to well-being and health in broadly positive ways through its own intrinsic affordances, for example by helping people to relax or feel a sense of peace and calm, or to have fun with creative pursuits (Long & Averill, 2003).

Given solitude's ubiquity, is it possible to enrich time spent alone and influence affect in everyday life? Such enrichment could be achievable if individuals are supported in the process of reevaluating their relationship with solitude. To this end, the current study aims to explore the potential advantages of solitude by investigating a multifaceted "Solitude Crafting" intervention designed to reshape young people's relationship with solitude. In doing so, it explores the feasibility of implementing a solitude intervention in day-to-day settings and examines how this may alter the way emerging adults engage with solitude.

Young people provide an ideal context for this proof of concept because they tend to have more conflictual relationships with solitude but can also deeply benefit from it (Galanaki et al., 2023; Pauly et al., 2017). The study evaluates the benefits of re-conceptualizing solitude as an opportunity rather than an undesired circumstance and investigates the role that proactive planning for optimal solitude experiences plays in enhancing the quality of solitude experiences.

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Affordances of solitude for emerging adults

Rooted deeply in spiritual and intellectual traditions (Long & Averill, 2003), a growing body of work supports the psychology perspective that solitude is more nuanced and positive than simply being physically separated from others. Indeed, the image of optimal solitude is often of the hermit of old, sitting alone atop a mountain (France, 2001). Yet solitude is a state that is readily available to all, and one that offers everyday benefits that are more mundane, and more accessible than spiritual transcendence. The value of solitude stems from its potential to disrupt the attentional and behavioral demands of social life, offering a chance to step back, relax, reflect, and revisit one's own priorities (Long & Averill, 2003; Storr, 2005; Weinstein et al., 2023).The relationship between emerging adults – those aged 18–26 years (Arnett, 2000) – and solitude is intriguingly complex. On one hand, emerging adults are more likely than older adults to view solitude negatively, and they associate a greater number of pre-conditions necessary for time to be fulfilling, such as having an activity to pass the time (McVarnock et al., 2025) and having autonomous motivation to spend time in solitude (Nguyen et al., 2019; Ost-Mor et al., 2021; Pauly et al., 2017). Reinforcing these views, emerging adults also tend to perceive spending time alone as social failure, rather than a normal, recuperative part of self-care (Nelson & Millett, 2021; Nguyen et al., 2019).

On the other hand, young people typically face extensive social demands. Emerging adulthood is often a time of considerable change and self-exploration, during which individuals often replace old social ties with new relationships that align with their evolving roles and identities (Arnett, 2000, 2007; Lapierre & Poulin, 2022). The transition away from parental and childhood support groups is difficult and intensifies the pressure to be sociable. These pressures can exacerbate feelings of isolation and loneliness (Nelson, 2013; Nelson & Millett, 2021; Simone et al., 2022).

However, there is mounting evidence that solitude may provide important benefits during this time of change. For example, having time to oneself has been shown to have a multitude of benefits, including identity formation (Bowker et al., 2021), autonomy (Coplan et al., 2022), relaxation and reflection (Weinstein et al., 2021), self-regulation (Nguyen et al., 2018), and feelings of freedom and self-sufficiency (Averill & Sundararajan, 2014; Weinstein et al., 2021).

Crafting solitude: rethinking one's relationship with time alone

The relationship with solitude is malleable and, on average, naturally viewed more positively as adults age (Chui et al., 2014; Larson, 1990; Lay et al., 2020). Evidence of this shift toward a more positive view of solitude raises the question: if one's relationship with solitude improves naturally over the span of an adult lifetime, can we do anything to bring about this change over days and not decades?

A growing body of work suggests that the way solitude is framed can shape people's emotional experiences of it. Recent studies (Nguyen et al., 2023Rodriguez et al., 2020) have begun to explore whether the perception of solitude, and consequently one's experience of it, can be improved by reframing the concept itself. Leading this effort, Rodriguez et al. (2020) randomly assigned emerging adults to read one of three passages – covering the benefits of solitude, the prevalence of loneliness, or a neutral topic – before entering a 10-minute solitude period. Participants who read about the benefits of solitude showed smaller declines in positive mood during a subsequent solitude period compared to those in the control group. In contrast, participants who read the passage on loneliness did not experience the same benefits. A conceptual replication by Scott and Weinstein (2023) demonstrated a reduction in negative affect when participants considered the positive benefits of solitude, such as reflection, relaxation, and self-connection, compared to associating it with loneliness. More recently, Rodriguez, Pratt, et al. (2025) extended this work, showing that even lonely individuals can benefit from positively reframing solitude, resulting in improved emotional experiences during time spent alone. This result appears to generalize across cultures, with Rodriguez, Schertz, et al. (2025) finding consistent support that individuals who hold more positive beliefs about being alone are buffered against the increases in loneliness

typically experienced by those who hold more negative views of solitude. Taken together, this work strongly suggests that positively reframing solitude may enhance emotional regulation and mitigate the often-observed reduction in positive mood among emerging adults in solitude (Nguyen et al., 2018; Wilson et al., 2014).

These studies add to a growing body of literature that shows that brief cognitive reappraisal techniques can be effective in eliciting changes in behavior. Previous studies have shown success in moderating negative mood in responses to stress (Johnson et al., 2016), anxiety (Xu et al., 2020), as well as supporting increased positive affect and self-esteem (Nezlek & Kuppens, 2008; Riepenhausen et al., 2022) and reducing the negative perceptions of loneliness and fear of missing out (FOMO) (Alutaybi et al., 2020).

We posit, however, that attitude change alone is not sufficient for changing one's relationship with solitude. Solitude may provide a platform for activities that are not only beneficial, but also provide intrinsic enjoyment or value (Weinstein et al., 2023). Early research in solitude has suggested that these include self-discovery, creativity and problem solving (Long & Averill, 2003). In fact, a significant predictor of solitude enjoyment is one's score on the self-determined motivation for solitude scale, a metric that gauges the range of benefits an individual perceives in spending time alone, such as valuing privacy, tranquility and emotional self-connection (Thomas & Azmitia, 2019). Some of these activities offer distraction and relaxation, making them beneficial for downregulating both stressors and environmental overload (Suedfeld et al., 1982, 1983). Conversely, other activities can be both challenging and fulfilling, allowing the individual to benefit from solitude because they derive a sense of satisfaction from goal pursuit, competence or efficacy, or find reward in the process of skill-building and growth (Cohen & Sherman, 2014; Russo-Netzer & Cohen, 2023; Thompson & Wilkie, 2021).

The benefits of engaging in solitary activities appears to be closely tied to the degree of personal agency in choosing those activities. One of the most consistent findings across the solitude literature highlights the crucial role of choiceful solitude in enhancing the quality of solitary experiences (Chua & Koestner, 2008; Long & Averill, 2003; Nguyen et al., 2019; Ost Mor et al., 2021; Thomas & Azmitia, 2019; Weinstein et al., 2023). While this research has predominately focused on the role of choice in relation to the intention to *enter* solitude states, emerging studies suggest that autonomy in selecting activities *within* solitude also has notable consequences. Specifically, individuals experience diminished quality in solitary activities and report poorer psychological well-being when activities are not actively chosen, compared to those that are self-selected (Lay et al., 2020; Tse et al., 2022).

Current research

The literature covered to date highlights that emerging adults may default to a more negative view of solitude and stand to benefit from solitude re-framing. It may be possible to bring about a measurable change in affect by improving the relationship with solitude using a brief re-appraisal technique paired with a choiceful, intentional, and thoughtful plan for optimizing solitude time through the activities within it. The current studies aimed to explore these premises by systematically examining the effects of a "Solitude Crafting" intervention that encouraged positively reframed solitude, combined with guidance on creating structured activities for solitude time. The goal was to determine whether such an approach could bring about meaningful changes to psychological well-being. Two studies were designed to explore the feasibility and initial efficacy of this solitude-focused intervention by asking participants to trial Solitude Crafting and measuring their experiences and perceptions before and after a 5-day period to model change (Pilot Study), and with an experimental approach comparing a 3-day Solitude Crafting intervention to a counterbalanced 3-day period against a comparison period of "Solitude as Usual" (Full Study).

Across the two studies we tested two main research questions:

(1) Can an intuitive, user-friendly intervention (which we call *Solitude Crafting*) be developed which can be implemented among emerging adults?

(2) Does participation in the Solitude Crafting intervention lead to meaningful enhancements in psychological well-being, operationalized in terms of greater positive and lower negative affect and stress?

Pilot study

A first study was designed to pilot the feasibility of the Solitude Crafting Manipulation and its affective correlates across a five-day period during which emerging adult participants intentionally sought solitude following an initial crafting activity (see details in the Method below).

Method

Participants and recruitment

We recruited 120 participants from the student population at The University of Reading. The mean age was 20.6 years ($SD = 4.4$ years, IQR = 2) and gender was split as follows: 80.8% female ($n = 97$), 14.2% male ($n = 17$), 3.3% non-binary ($n = 4$), 0.8% prefer to self-identify ($n = 1$) and 0.8% who did not respond ($n = 1$). Ethnicity was reported as follows: White/Caucasian (52.5%; $n = 63$), South Asian (15.8%; $n = 19$), African (8.3%; $n = 10$), Asian (6%; $n = 8$), Middle Eastern (4.2%; $n = 5$), Hispanic (0.8%; $n = 1$), or other (11.7%; $n = 14$). Sociodemographic data showed that the three most common living arrangements in our sample were: 25% Living with "Similarly aged friends" ($n = 30$), 12.5% living with parents ($n = 15$), or a mixture of the two between term time ($n = 10$). Only 4.17% ($n = 5$) stated that they currently lived alone, or a combination of living alone (during term time) and with others. Participants were fairly equally distributed across first and second years of university, with 58 (48.3%) who were first-year students, and 52 (43.3%) who were second-year students, with twelve students who were neither first-nor second-year or did not disclose their year. All received course credit as compensation for taking part.

Procedure

The study was conducted over two online sessions, pre-intervention (Day 1) and post-intervention (Day 6). During the pre-intervention phase, participants received instructions on how to create their own "solitude plan" (procedure below). Following this, participants were asked to spend at least 15 minutes a day, for 5 days, engaging with their solitude plan and trying out the activities they had listed. This 15-minute time period has previously been shown to be sufficient to establish meaningful changes in affect (Nguyen et al., 2018), without being overly obtrusive to fit into a daily routine. On the sixth day, participants completed the post-intervention survey, detailing their experiences of using the solitude plan and reporting their affect(s) over the 5-day period. Participants completed, on average, 3.37 days of solitude activities (IQR = 1) out of the allotted five-day schedule.

Materials

The solitude crafting intervention can be found, in full, on the project website on OSF [https://doi.org/10.17605/OSF.IO/N2BTC] The intervention was structured in three stages. First, a psychoeducational approach (Authier, 1977) was taken to discuss societal narratives of solitude and reframe solitude in terms of its affordances. Second, participants were asked to consider activities that they would like to pursue in solitude from a menu of options designed to inspire and offer choice. Finally, participants explored concretely how they would like to put those activities into practice by considering which environments might be conducive and identifying any barriers that might stand in their way. This approach was designed to provide concrete, personalized, and actionable plans for engaging in solitude.

The first phase of the intervention was aimed at challenging assumptions about solitude and reframing solitude as a normal, and indeed potentially *beneficial* aspect of life. Participants first read two passages of text which outlined the importance of how people *think* and how we *use* solitude respectively. Participants were then invited to consider this in the context of their own solitude (e.g., "How could you apply the ideas you read to your own daily life?" and "What are possible barriers for you to taking advantage of solitude opportunities?").

Participants then followed a guided set of instructions on how to craft their own "Solitude Plan." First, participants identified themes that interested them from a "menu" of eight common types of solitude activities (e.g., "Creativity – Drawing, crafting, cooking etc"; "Nature connection – walking in nature, sitting by the ocean etc."; Long & Averill, 2003), and created a list of related activities that they might wish to do in their own time. Participants were asked to ensure that their list included activities that ranged from "comfy" (i.e., activities that they regularly do in solitude) to "challenging" (i.e., an activity often considered, but rarely put into practice) to encourage individuals to stretch their imagination and consider unusual but potentially beneficial activities. Participants were asked to write down what they hoped to achieve by engaging in each solitude activity, and to plan which days and times within the week might be best to set aside 15 minutes to try out those activities. This information was then collated into a single table document, with participants asked to keep a copy for reference.

Measures

Measures related to demographics (age, gender, ethnicity etc.) were completed at Time 1 (baseline). Measures related to feasibility and perceived contribution of solitude activities to affect were completed once, at post-intervention (Time 2), on the sixth day. Measures of affect were completed twice, once at baseline and again on the sixth day, following the solitude intervention.

Intervention feasibility

In this first section participants were asked to rate the number of days (out of five) that they executed on the solitude plan. We also tested feasibility of the solitude planning and execution process by asking three questions: (A) "How easy did you find creating your solitude plan?" (B) "How easy did you find it to use your solitude plan in your daily life over the five days?" (C) "Would you use the solitude plan again in the future?" Such items have used to evaluate cognitive interventions when developing new tools (Gerhardsson et al., 2024; Fishman et al., 2020).

Affect change

To answer whether the intervention was linked to shifts in affect across the week we asked participants to rate how they had felt over the past five days both before (pre-intervention) and after five days of the intervention (post-intervention). Participants were asked: "Over the past five days, I've felt . . . " followed by ten affect measures (Stressed, Lonely, Happy, Calm, Sad, Relaxed, At-ease, Bored, Enjoyment, Peaceful) rated on a scale of 0 (*Not at all*) to 100 (*Extremely*) in a similar fashion to (Lay et al., 2018); Tsai et al. (2006). From this we computed the following composite measures: 1) Low-arousal positive affect (LAPA): We averaged four items (calm, relaxed, at ease, peaceful); pre-intervention: $\alpha = .88$, post-intervention: $\alpha = .90$; 2) Low-arousal negative affect (LANA): We averaged three items (loneliness, sad, bored); pre-intervention: $\alpha = .62$, post-intervention: $\alpha = .70$; 3) High-arousal positive affect (HAPA): We averaged two items (happy, enjoyment); pre-intervention: $r = .68$, post-intervention: $r = .57$; 4) High-arousal negative affect (HANA) was measured using a single item (stress).

Together this formed our four affect variables of interest. This measurement strategy captures both valence (positive vs. negative) and arousal (high vs. low), dimensions consistent with the Circumplex Model of Affect (Posner et al., 2005; Russell, 1980). Distinguishing affect on a valence scale, rather than

simply focusing on arousal, is particularly important in research on solitude, where low-arousal states are often prevalent and considered meaningfully distinct from high-arousal states (Pauly et al., 2016).

Perception of solitude as responsible for affect

To explore whether individuals attributed their post-intervention affect scores to the solitude crafting activities over the five days we asked: *"How much would you say the solitude activities done as part of the study were responsible for these feelings?"* for each of the ten affect measures listed above. The three composites were computed in a similar manner to above. Peaceful affect (α = .89); Low-arousal negative affect (α = .83); High-arousal positive affect (r = .73). Together with the measure of high-arousal negative affect, this formed our four "affect due to solitude" variables of interest.

Results

Solitude crafting feasibility tests

Solitude crafting feasibility

On average, participants found the crafting process to be quite achievable. As illustrated in Figure 1 (A), the mean rating for ease of creating the plan was 75.5 (SD = 18.1), when rated on a scale of 0 (*very difficult*) to 100 (*very easy*). This suggested that the crafting process was largely intuitive for most participants.

Daily solitude plan implementation

Participants found *implementing* the solitude plan comparatively difficult, with a mean rating of 55.7 (SD = 22.0) when rated on a similar scale. A paired samples t-test confirmed the difference between ease of solitude crafting and plan implementation was significant, $t(119) = 9.94$, $p < .001$, $d = .87$.

Links between ease of crafting and ease of implementing

While the average ratings suggest a difference between the two tasks, results at the individual level reveal a significant correlation between the ease of creating the plan and the ease of implementing the plan (r = .42, $p < .001$; Figure 2B). For some individuals, both creating and implementing the plan

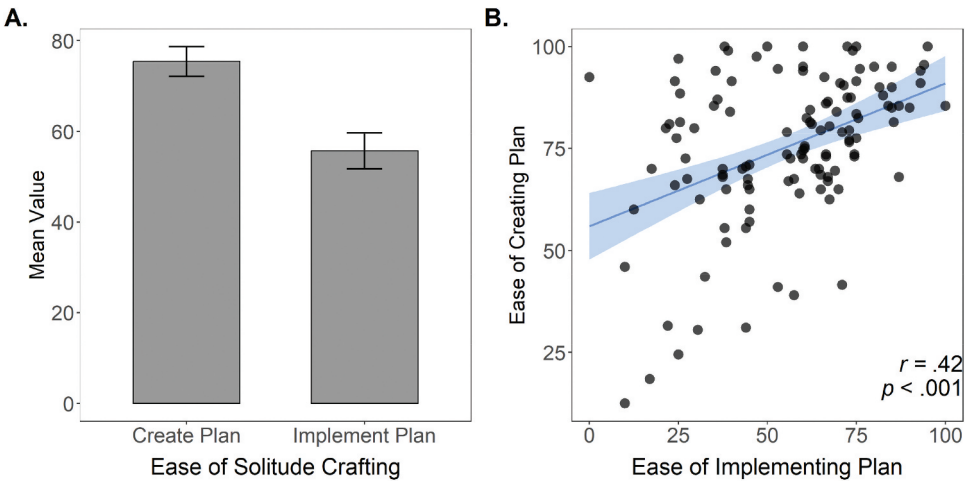

Figure 1. Ratings of the ease of creating and implementing the solitude plan. (A) Mean ratings on ease of creating the solitude plan (left column) and implementing the plan (right column) in their daily lives over the five-day period. Error-bars represent standard errors of the mean. (B) the relationship between these eases of creating and implementing the solitude plan. The blue line indicates the linear regression line of best fit, the shaded area represents 95% confidence bounds of the regression estimate.

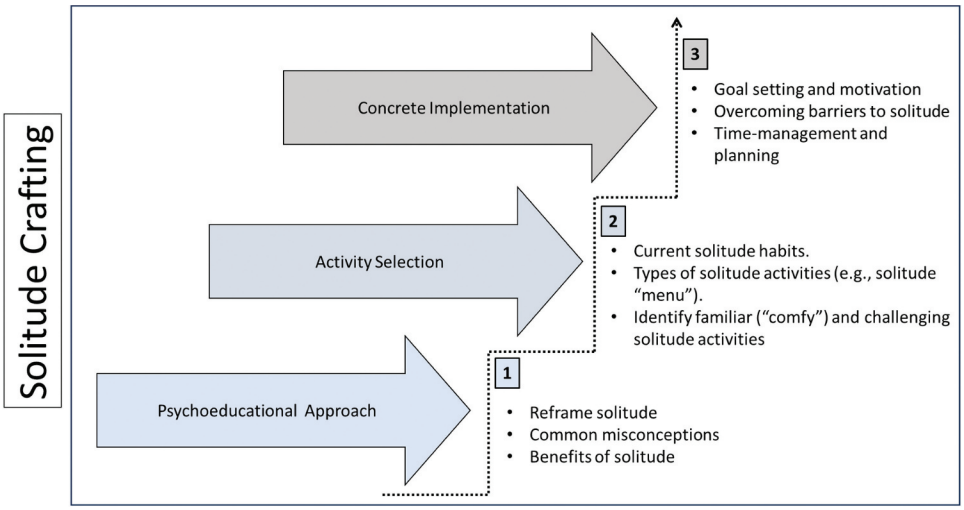

Figure 2. Solitude Crafting intervention. Schematic of the stages of the Solitude Crafting intervention. In the initial stage, we use a psychoeducational approach to identify common misconceptions surrounding solitude, and re-frame it as an opportunity and in terms of its potential benefits. In the second stage, individuals are guided through the process of thinking about their current solitude habits, identifying potential types of solitude that may interest them, and categorizing these activities on a scale from comfortable to challenging. In the final stage participants are guided through constructing goals for solitude time, identifying barriers to finding time for solitude, and considering how to manage their time effectively to plan for solitude time.

appeared to come easily, while others found both processes challenging. We take up this point further in the discussion.

Participant completion rate

Despite the perceived difficulty in implementing the solitude plan into their daily routines, most ($n = 101$ out of 120; 84.1%) participants completed three or more days. In addition, participants reported enjoying their solitude time ($M = 75.4$, $SD = 14.5$), with most participants ($n = 100$ out of 120; 83.3%) responding that they would use the solitude crafting process again in the future.

Did individuals attribute how they felt to the solitude intervention?

When asked how much they believed their solitude activities contributed to their post-intervention affective state, emerging adults perceived all four variables of interest to be responsible, but to varying degrees (Table 1). Specifically, individuals attributed a significant level of responsibility to their solitude activities for influencing their levels of stress (high-arousal negative affect) ($M = 23.9$, $SD = 24.9$, $t(116) = 10.43$, $p < .001$, $d = 0.97$), peaceful affect (low-arousal positive affect) ($M = 62.4$, $SD = 19.3$, $t(116) = 35.12$, $p < .001$, $d = 3.23$), low-arousal negative affect ($M = 22.1$, $SD = 19.0$, $t(116) = 12.68$, $p < .001$, $d = 1.17$), and high-arousal positive affect ($M = 59.0$, $SD = 20.1$, $t(116) = 31.83$, $p < .001$, $d = 2.93$).

Table 1. One-way T-Tests predicting perceived contribution of solitude activities to post-intervention affect.

Affect variable	N	Mean (SD)	t	p-value	d
High-arousal negative affect	117	23.9 (24.9)	10.43	< .001	0.97
Low-arousal positive affect	117	62.4 (19.3)	35.12	< .001	3.23
Low-arousal negative affect	117	22.1 (19.0)	12.68	< .001	1.17
High-arousal positive affect	117	59.0 (20.1)	31.83	< .001	2.93

Notes. All variables were non-normally distributed. Wilcoxon signed-rank tests were conducted and did not change the result. All tests were Bonferroni corrected (i.e., 0.05/4 = 0.0125).

Table 2. Means and paired sample T-Tests for pre- and post- solitude Crafting intervention.

	Pre-Intervention	Post-Intervention	t	p	d
Affect variable	M (SD)	M (SD)			
High-arousal negative affect	71.1 (20.4)	48.0 (23.1)	8.95	< .001	.82
High-arousal positive affect	54.0 (18.0)	64.0 (14.2)	−6.33	< .001	.58
Low-arousal negative affect	45.6 (19.4)	40.2 (18.7)	3.16	.002	.29
Low-arousal positive affect	42.4 (17.3)	60.9 (17.4)	−9.83	< .001	.90

Notes. Variables were not normally distributed. Exploratory (unplanned) Wilcoxon signed-rank tests were conducted accounting for these distributions; these did not change the result.

Intervention benefits for emerging adults

Paired samples *t*-tests were conducted to determine whether affect shifted across the period of the study, from pre-intervention to post-intervention (i.e., 5 days later). Results are shown in Table 2. Significant shifts in affect were observed across all four variables of interest. Specifically, both negative affect measures showed significant reductions. High-arousal negative affect (HANA) showed a significant decrease from pre-intervention ($M = 71.1$, $SD = 20.4$) to post-intervention ($M = 48.0$, $SD = 23.1$), $t(118) = 8.95$, $p < .001$, $d = 0.82$. Similarly, low-arousal negative affect (LANA) significantly decreased from pre-intervention ($M = 45.6$, $SD = 19.4$) to post-intervention ($M = 40.2$, $SD = 18.7$), $t(119) = 3.16$, $p = .002$, $d = 0.29$.

Furthermore, both positive affect measures showed significant *increases* between the pre and post timepoints. Low-arousal positive affect (LAPA) showed a significant increase pre-intervention ($M = 42.4$, $SD = 17.3$) to post-intervention ($M = 60.9$, $SD = 17.4$), $t(119) = -9.83$, $p < .001$, $d = 0.90$. High-arousal positive affect (HAPA) showed a similar increase from pre-intervention ($M = 54.0$, $SD = 18.0$) to post-intervention ($M = 64.0$, $SD = 14.2$), $t(119) = -6.33$, $p < .001$, with a d of .58.

Pilot study conclusions

Findings of the pilot study indicated feasibility of the Solitude Crafting intervention. Participants found the initial crafting activity itself accessible, but some struggled to execute on their crafted goals for solitude. Despite this, the majority were successful in engaging Solitude Crafting on at least three days of the planned five. We also observed shifts toward more positive daily affect, as indicated by a reduction of both high (stress) and low (lonely, sad, bored) arousal negative affect, with a corresponding increase in low (relaxed, calm, at-ease, peaceful) and high (happy, enjoyment) arousal positive affect measures. Although we did not have a control group in this study, participants attributed significant contributions of their solitude activities to all four of these affect measures post-intervention, suggesting that participants subjectively felt that solitude crafting had positively impacted their well-being across the period of the study.

Full study

Despite the promising findings, the methodology used in the pilot study (in which all received the intervention, with no control group implemented), made it difficult to draw conclusions regarding the efficacy of the intervention separate from any incidental or spontaneous improvements in well-being. Therefore, a second study was designed to test the effectiveness of the intervention more robustly. This was achieved by introducing a "Solitude as Usual" comparison group that occurred *before* Solitude Crafting (thus not having had any benefits of the Solitude Crafting activity) or *after* Solitude Crafting (possibly, with residual benefits of the Solitude Crafting approach). With this approach, we once again tested Research Question 1 regarding the feasibility of Solitude Crafting and Research Question 2 regarding its relations with everyday solitude.

Given that we had initial findings from the Pilot study, we preregistered our methodology, expectations, and approach before data collection was completed and before viewing the data.

Several deviations were made from the pre-registration [https://doi.org/10.17605/OSF.IO/N2BTC]. First, to systematically test affect change for both Solitude Crafting and Solitude as Usual time-points we compared time-points in a manner sensitive to participants' (baseline) reports before the Solitude Crafting intervention (as we describe below). Second, we focus our results on feasibility and affect findings in our full study because these were central to our research goal to develop an initial understanding of the usefulness of Solitude Crafting in emerging adults' daily life; analyses regarding open-ended data (qualitative findings) and those concerning expectations for solitude will be reported in future work building a deeper understanding of these issues. As such, we consider the analyses below exploratory (Nilsen et al., 2020); informed but not determined by our a-priori plans.

Method

Participants and recruitment

We recruited a total of 75 participants, 42 from the student population of The University of Reading and 33 aged-matched participants (i.e., aged 18 to 26) via Prolific. The mean age was 21.6 years old ($SD = 3.2$ years, IQR = 5). 70.7% ($n = 53$) identified as female, 26.7% ($n = 20$) identified as male, and 2.7% ($n = 2$) identified as non-binary or genderqueer. Ethnicity was split as follows: White/Caucasian (60%; $n = 45$), South Asian (12%, $n = 9$), Asian (10.7%; $n = 8$), African/Black (4%; $n = 3$), Middle Eastern (2.7%; $n = 2$), Hispanic (1.3%; $n = 1$) and Other (9.3%; $n = 7$). Sociodemographic data showed that the three most common living arrangements in our sample were: "Living with parents" (26.7%; $n = 30$), "Living with similarly aged friends" (17.3%; $n = 13$), or "Living with a romantic partner" (8%; $n = 6$). Only 6.7% ($n = 5$) stated that they currently lived alone. Students received course credit for participation. Prolific participants received monetary compensation at the recommended hourly rate set by Prolific.

Procedure

The procedure in our full study closely resembled that of the first study, with the following key changes:

(1) Instead of two time-points (pre-intervention/post-intervention) separated by five days, our full study involved three time-points (pre-intervention, post-intervention, comparison) each separated by three days. Surveys were therefore completed on Day 1, Day 5, and Day 9 of the study (Figure 3).
(2) Participants were randomly allocated to two different Orders. In Order 1, participants received the surveys in this order: pre-intervention, post-intervention, comparison. In Order 2 they received the surveys in this order: comparison, pre-intervention, post-intervention. This mixed design allowed a more robust test of the intervention's efficacy by examining order effects.

The three surveys were structured as follows:

Pre-intervention

Participants completed questions related to how they felt over the previous three days. Following this, they completed the Solitude Crafting procedure (using a procedure that was identical to the Pilot study). As before, solitude was re-framed in a more positive light, and participants were guided through the creation of their own solitude plan. At the end of this survey participants were asked to find at least 15 minutes a day for the next three days in which to implement their plan (Figure 2 – solitude crafting). The pre-intervention survey was completed on Day 1 (Order 1; Solitude Crafting first) or Day 5 (Order 2; Comparison first).

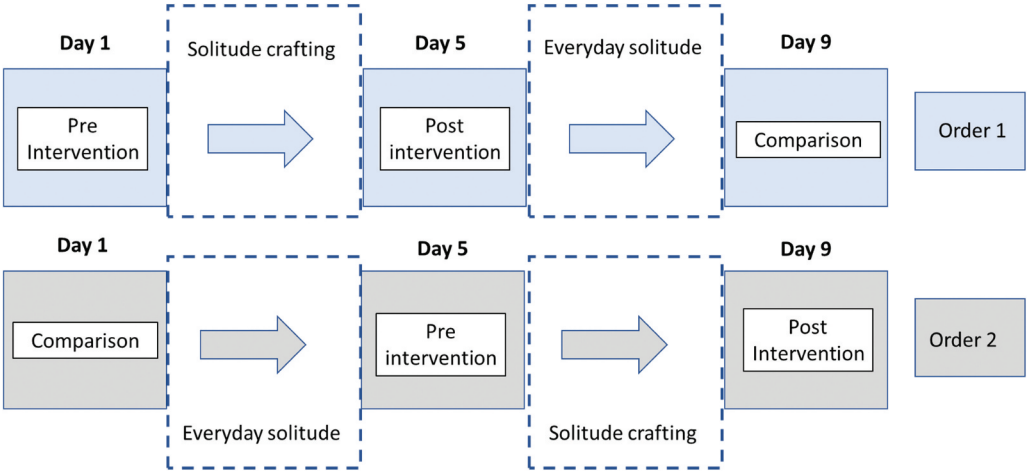

Figure 3. Schematic of the experimental paradigm. Schematic of the survey procedure for Order 1 (Blue) and Order 2 (Grey). In all cases participants received surveys on Days 1, 5 and 9. For Order 1 the surveys were completed in this order: pre-intervention, post-intervention, comparison. For those in Order 2 the surveys were completed in this order: comparison, pre-intervention, post-intervention. Between surveys participants either carried out their solitude crafting activities using the plan they had created in the pre-intervention survey (i.e., solitude crafting – dashed lines) or continued as normal with no further instructions on how to structure their time (i.e., everyday solitude – dashed lines).

Post-intervention

After completing their three days of Solitude Crafting, participants received the post-intervention survey. Here, they were asked about their experience of the crafting process itself (e.g., "How easy did you find the crafting process," and "Would you use the solitude crafting procedure again in the future?") and questions related to their affect over the past three days, as well as how much they attributed those feelings to their solitude activities. Following these questions, participants were given no further instructions on how to structure their solitude time (i.e., "Everyday solitude," Figure 3). The post-intervention survey was completed on Day 5 (Order 1) or Day 9 (Order 2).

Comparison

This survey simply asked participants to report how they had felt over the previous three days, and how much they attributed those feelings to their solitude time. The survey contained no re-framing or solitude crafting elements, nor any instructions on how to structure their solitude time (i.e., "Everyday solitude," Figure 3). Instead, this comparison survey allowed for a more effective examination of whether potential changes in affect were due to the intervention, or as a naturally occurring function of time. The comparison survey was completed at Day 9 (Order 1) or Day 1 (Order 2).

Measures

Measures related to demographics (age, gender, ethnicity etc.) were completed on Day 1 (pre-intervention for Order 1, comparison for Order 2). Measures related to feasibility and perceived contribution of solitude activities to affect were completed once, post-intervention (Day 5 for Order 1, Day 9 for Order 2). Measures of affect were completed three times (at each timepoint) on Day 1, Day 5, and Day 9.

Solitude crafting feasibility

Feasibility was measured with the same three items as in the pilot study, asking how easy participants found the crafting process (A), implementing the solitude plan into daily life (B), and whether they would use the plan again in the future (C).

Affect change

Affect was measured in the same manner as the pilot study, with participants asked to rate ten affect measures (Stressed, Lonely, Happy, Calm, Sad, Relaxed, At-ease, Bored, Enjoyment, Peaceful) on a scale of 0 (*not at all)* to 100 (*Extremely)*. As before, three composite measures were computed:

Peaceful affect (calm, relaxed, at-ease, peaceful), αs = .89, .94, and .92 for pre-intervention, post-intervention, and comparison timepoints respectively).

Low-arousal negative affect (loneliness, sadness, and boredom), αs = .71, .85, and .75 for pre-intervention, post-intervention, and comparison timepoints respectively.

High arousal positive affect (happiness, enjoyment), *rs* = .74, .65, and .69 for pre-intervention, post-intervention, and comparison timepoints respectively.

Together with the single item measure of stress (*high-arousal negative affect*), this formed our four affect variables of interest.

Perception of solitude as responsible for affect

As in the pilot study, we asked participants in reference to each of the ten affect measures, separately: "*How much would you say the solitude activities done as part of the study were responsible for these feelings*?" The three composites were computed in the same manner as reported previously. Peaceful affect (α = .85); Low-arousal negative affect (α = .85); High-arousal positive affect (*r* = .65). Together with the measure of stress (high-arousal negative affect), this formed our four "*perception of affect due to solitude*" variables of interest.

Results

Solitude crafting feasibility tests

Solitude crafting feasibility

Similar to the pilot study, results showed that, on average, participants found the crafting process accessible. On a scale of 0 (*very difficult*) to 100 (*very easy*), the mean rating for ease of creating the plan was $M = 77.1$ ($SD = 17.1$).

Daily solitude plan implementation

Participants found *implementing* the solitude plan in their daily lives more difficult, on average, $M = 59.4$ ($SD = 23.1$). The discrepancy between ease of using the plan and ease of *implementing* was significant as in the pilot study, $t(218) = 10.48$, $p < .001$, $d = .71$.

Links between ease of crafting and ease of implementing

The results at the individual level showed a significant correlation between the ease of creating the plan and the ease of implementing the plan ($r = .25$, $p < .001$). As in the previous study, some individuals created and implemented the plan easily, while others found both processes difficult.

Participant completion rate

The majority of participants successfully completed the plan on at least two out of the three days ($n = 61$ out of 75; 81.3%). Similar to the pilot study, participants broadly reported enjoying their solitude time ($M = 77.0$, $SD = 15.9$), with most ($n = 54$; 72%;) responding that they would use the solitude crafting process again in the future.

Did individuals attribute how they felt to the solitude intervention?

Replicating the results from the pilot study, one-way *t*-tests revealed that participants attributed their solitude time all four affect variables following the three days of planned solitude activities. Results are presented in Table 3. HANA ($M = 45.5$, $SD = 28.7$, $t(72) = 12.54$, $p < .001$, $d = 1.59$), LAPA

Table 3. Descriptives and one-way T-Tests for the Question "how much do you think the solitude activities were responsible for these feelings?".

Affect variable	N	Mean (SD)	t	p-value	d
High-arousal negative affect	73	45.5 (28.7)	13.54	< .001	1.59
High-arousal positive affect	75	61.6 (19.9)	26.77	< .001	3.09
Low-arousal negative affect	73	38.3 (22.8)	14.35	< .001	1.68
Low-arousal positive affect	73	63.3 (21.1)	25.62	< .001	3.00

Notes. All variables were non-normally distributed. Wilcoxon signed-rank tests were conducted and did not change the result.

($M = 63.3$, $SD = 21.1$, $t(72) = 25.62$, $p < .001$, $d = 3.00$), LANA ($M = 38.3$, $SD = 22.8$, $t(72) = 14.25$, $p < .001$, $d = 1.68$), and HAPA ($M = 61.6$, SD = 19.9, $t(74) = 26.77$, $p < .001$, $d = 3.09$).

Changes in affect

Analytic approach

To examine how expectations for solitude differed across time and order we adopted a mixed effect model approach, with assessment point (pre-intervention, post-intervention, comparison), order (Order 1: Intervention first; Order 2: Comparison first) and the order×assessment point interaction as Level 1 predictors nested within participants at Level 2. In all analyses, we set the pre-intervention time point and Order 1 (intervention first) as the reference category. All results presented in Table 4 are reported in relation to these reference standards. Results are presented visually in Figure 4.

Intervention benefits for emerging adults

Changes during solitude Crafting intervention days

Results (summarized in Table 4) showed main effects of assessment point during the intervention period predicting the three affect outcomes: HANA ($b = -12.89$, 95% CI [−21.79, −3.99], $p = .005$); LAPA ($b = 15.94$, 95% CI [9.26, 22.62], $p < .001$) and HAPA ($b = 11.44$, 95% CI [−4.81, 18.06], $p = .001$). LANA did not show a significant post intervention difference ($b = -3.67$, 95% CI [−9.64, 2.31], $p = .228$). Order of condition (whether Solitude Crafting preceded or followed the Comparison condition) did not moderate those results (Table 4). As in the pilot study, participants felt less stress (high-arousal negative affect), more peaceful (low-arousal positive affect), as well as greater happiness (high-arousal positive affect) following the intervention.

Changes during comparison days

Examining changes that occurred during the Comparison period showed a different pattern of results. As was the case for the Solitude Crafting days, participants reported increases in positive affect, and decreases in negative affect, from baseline to after those three days.

However, unlike the Solitude Crafting days, these changes were qualified by interactions for perceived high-arousal negative affect, low-arousal positive affect, and low-arousal negative affect ($b = 18.64$, 95% CI [6.08, 31.20], $p = .004$; $b = -11.60$, 95% CI [−21.02, −2.17], $p = .016$; and $b = 13.16$, 95% CI [4.72, 21.59], $p = .002$, respectively). Examining this interaction, those who spent three days with everyday solitude first (before intervention) exhibited increased HANA (stress) levels of 18 units (18% on this scale), 11 units (11%) of feeling *less* peaceful compared to those who received it *after* the intervention, and 13 units (13%) of feeling greater low-arousal negative affect as compared to those who engaged Solitude Crafting before their everyday solitude period.

Simple slopes analysis (Figure 5) further revealed that the difference between the pre-intervention and the comparison surveys was significant for those in Order 1 (Perceived HANA: $b = -13.54$, $SE = 4.56$. $t = -2.97$, $p = .003$; LAPA: $b = 10.01$, $SE = 3.42$. $t = 2.93$, $p = .004$; LANA: $b = -9.88$, $SE = 3.06$. $t = -3.23$, $p = .002$) but not those in Order 2 (Perceived HANA: $b = 5.11$, $SE = 4.46$, $t = 1.15$, $p = .025$;

Table 4. Changes in affect across three assessment-points (pre, post, comparison).

	High-arousal negative affect (HANA)		High-arousal positive affect (HAPA)		Low-arousal negative affect (LANA)		Low-arousal positive affect (LAPA)	
	Est	CI	Est	CI	Est	CI	Est	CI
Fixed effects								
order	−9.16	−22.19–3.87	3.35	−5.96–12.65	−7.53	−17.75–2.70	1.27	−8.35–10.90
Post-intervention	**−12.89****	−21.79 – −3.99	**11.44*****	4.81–18.06	−3.67	−9.64–2.31	**15.94*****	9.26–22.62
Comparison	**−13.54****	−22.52 – −4.55	**7.07***	0.45–13.69	**−9.88****	−15.92 – −3.85	**10.01****	3.27–16.75
Interaction effects								
order * post intervention	4.63	−7.99–17.25	−7.77	−17.11–1.58	−0.48	−8.96–7.99	−5.05	−14.52–4.41
order * comparison	**18.64****	6.08–31.20	−8.45	−17.72–0.81	**13.16****	4.72–21.59	**−11.60***	−21.02 – −2.17

	High-arousal negative affect (HANA)		**High-arousal positive affect (HAPA)**		**Low-arousal negative affect (LANA)**		**Low-arousal positive affect (LAPA)**	
	Est	*CI*	*Est*	*CI*	*Est*	*CI*	*Est*	*CI*
Fixed effects								
order	−9.16	−22.19–3.87	3.35	−5.96–12.65	−7.53	−17.75–2.70	1.27	−8.35–10.90
Post-intervention	**−12.89****	−21.79 – −3.99	**11.44*****	4.81–18.06	−3.67	−9.64–2.31	**15.94*****	9.26–22.62
Comparison	**−13.54****	−22.52 – −4.55	**7.07***	0.45–13.69	**−9.88****	−15.92 – −3.85	**10.01****	3.27–16.75
Interaction effects								
order * post intervention	4.63	−7.99–17.25	−7.77	−17.11–1.58	−0.48	−8.96–7.99	−5.05	−14.52–4.41
order * comparison	**18.64****	6.08–31.20	−8.45	−17.72–0.81	**13.16****	4.72–21.59	**−11.60***	−21.02 – −2.17

Notes. Estimates are unstandardized betas. * $p < .05$ ** $p < .01$ *** $p < .001$. The pre-intervention assessment-point was entered as the reference standard against which the post-intervention and comparison assessment-points were compared. As such the table represents the changes from pre-intervention to post-intervention, and pre-intervention to comparison assessment-points respectively. Significant post-intervention fixed effects demonstrate changes in respective affect over the course of the intervention. The lack of interaction effect suggests that these significant shifts in affect were reported participants regardless of which Order they completed the study. Conversely, the significant comparison fixed effects are mediated by the interaction with Order, suggesting that the change in affect between the comparison and pre-intervention timepoint was dependent on which order participants were assigned to. This is clearly represented visually in Figure 4.

LAPA: $b = -1.59$, SE = 3.34, $t = -0.47$, $p = .064$; LANA: $b = 3.27$, $SE = 2.99$, $t = 1.09$, $p = .028$), suggesting that those who received the comparison condition last (i.e., *after* the intervention) were less stressed, showed less low-arousal negative affect, and were more peaceful (i.e., greater LAPA) than those who had the comparison survey first (i.e., *before* the intervention).

Study conclusions

The results of the second study reinforced the efficacy of the Solitude Crafting intervention. Participants found the intervention to be accessible, enjoyable, and most expressed willingness to use it again in the future. However, as observed in the pilot study, integrating the plan into daily routines remained challenging for some. Despite this, participants attributed their post-intervention feelings to the Solitude Crafting approach, suggesting that it was influential when implemented. This subjective perception aligned with corresponding changes in actual affect: results showed a reduction of stress (HANA), and a marked increase in both low-arousal (calm, peaceful) and high-arousal (happiness, enjoyment) positive affect during Solitude Crafting days. Furthermore, examining comparison timepoints indicated potential carry-over benefits of the Solitude Crafting intervention to everyday solitude. Those who received the comparison survey *after* the intervention reported significantly reduced high (stress) and low arousal negative affect, as well as increased low arousal positive affect than those who received the comparison survey *before* the intervention. Overall, the

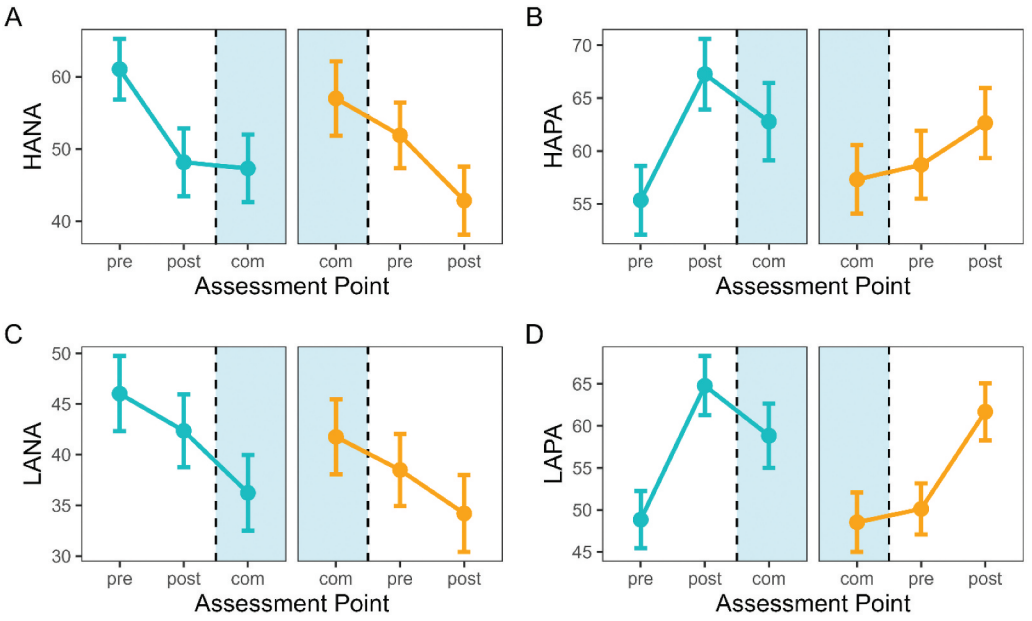

Figure 4. Full study means and standard deviations for affective changes in four outcomes across the two Order conditions. Means and standard deviations for the four affect outcomes (HANA, HAPA, LANA, LAPA) in panels A to D respectively. Within each panel, the x-axis shows the three assessment points (pre-intervention, post-intervention, and comparison). Blue lines (left column) represent participants in Order 1, and orange lines (right column) represent participants in Order 2 with the respective order of assessment points reflected on the x-axis. Of primary interest is the pre to post intervention change in affect (white – non-shaded area). The shaded blue area represents the "comparison" assessment point, which occurred *after* the intervention (day 9) for those in Order 1, and *before* the intervention (day 1) for those in Order 2. Visual inspection shows that, for those in Order 2, the errorbars for the "com" and "pre" assessment points overlap in each panel, reflecting that participant's affect did not change significantly until the intervention started.

Solitude Crafting intervention not only provided immediate (i.e., post-intervention) affective benefits but displayed some potential for benefits to be sustained beyond the period of the activity.

Discussion

The Solitude Crafting Intervention was designed to reframe solitude and provide guidance on how to structure solitude time. The approach was aimed at fostering intentionality in pursuing positive experiences of solitude, and a sense of autonomy as individuals engaged in self-selected, meaningful activities conducted in solitude.

Results across two studies supported the overall feasibility and efficacy of this approach. Most emerging adults who engaged in Solitude Crafting found it generally intuitive and could implement three days of it. Further, when solitude was approached through the lens of Solitude Crafting, it became not only accessible and enjoyable, but also beneficial beyond the solitude periods. Collectively our findings provide support for the ability of the intervention to induce significant affective change, with notable reductions in stress as well as marked increases in both low-arousal (e.g., peacefulness, calmness) and high-arousal (e.g., happiness, enjoyment) positive affect, with these benefits persisting several days post-intervention, even without further guidance. These findings build on previous research showing that daily solitude can reduce stress (Weinstein et al., 2023), foster feelings of relaxation and peacefulness (Korpela & Staats, 2013; Nguyen et al., 2018), enhance self-connection and autonomy (Weinstein et al., 2021) and provide a sense of meaning and enjoyment (Tse et al., 2021). Unlike previous studies which focused solely on changing singular aspects of how solitude is

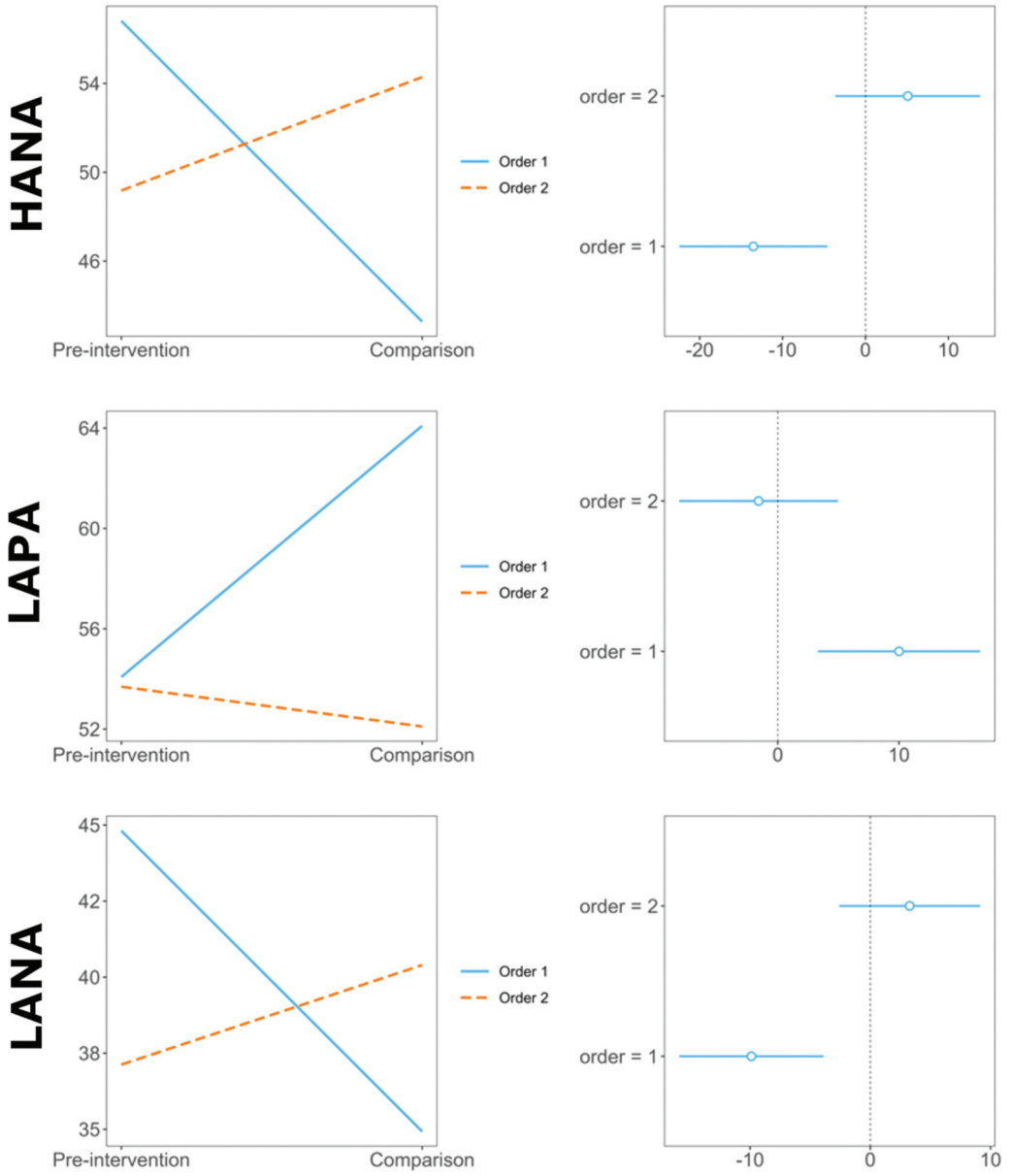

Figure 5. Full study interaction effects and simple slopes analysis predicting affect. The right column shows the coefficients, and 95% confidence bounds for both orders. The left column shows the simple slopes comparisons between the pre-intervention and comparison timepoints for the three significant interactions (HANA, LAPA, LANA). Blue (solid) lines represent cases where the comparison timepoint occurred after the intervention. Orange (dashed) lines represent cases where the comparison timepoint occurred before the intervention.

framed (e.g., Rodriguez et al., 2020; Weinstein & Nguyen, 2020), the present research utilized multiple, theoretically driven components to maximize benefits whilst maintaining the brief, self-administered format of the intervention. Together, our results build upon the reported benefits of reframing ideas about solitude (Rodriguez et al., 2020) to provide the first direct evidence supporting benefits of the *Solitude Crafting* intervention.

Solitude crafting feasibility

In developing an intervention, it is important to first ensure that the intervention is accessible to the target user (Pogrebtsova et al., 2018). Three key findings stand out concerning the crafting procedure itself: First, participants found the process to be intuitive and user-friendly. This is crucial because the intervention's success hinges on its clarity and simplicity, especially given its brief, self-administered format. Second, adherence to the intervention was high and comparable to other short-term reappraisal strategies (e.g., Johnson et al., 2016). This indicates that 15 minutes of solitude per day was manageable for most people, aligning with the time-frame used in previous studies (Nguyen et al., 2018; Pfeifer & Wittmann, 2020; Pfeifer et al., 2019; Rodriguez et al., 2020; Wilson et al., 2014). Finally, most participants rated the process as enjoyable and expressed willingness to use the Solitude Crafting process again in the future. Positive responses to both the intervention and the solitary experience itself suggest that the intervention is feasible to incorporate in everyday life and offered meaningful guidance on how to structure solitude time.

Benefits for daily emotional wellbeing as operationalized through affect

Solitude Crafting demonstrated robust benefits for daily emotional well-being in both studies. Importantly, participants in both studies attributed significant changes in their affective states to their solitude activities, particularly in low-arousal positive emotions such as peacefulness and high-arousal positive emotions such as happiness. This attribution serves as compelling evidence of the effectiveness of interventions centered on solitude. In doing so, the crafted solitude experiences demonstrate a similar impact on emotional states as other brief cognitive reappraisal interventions (Mauss et al., 2007; Webb et al., 2012).

Furthermore, our results suggest that there may be a temporal aspect to the benefits of the solitude intervention. In the first study there was a significant reduction in low-arousal negative affect from pre-to post-intervention that was not present in the second study. However, closer examination of the interaction effects revealed a notable reduction of low-arousal negative affect between pre-intervention and comparison timepoints, but only for those who received the comparison three days *after* the intervention. Together with the results from the pilot study, which spanned five days compared to only three days in our full study, these results suggest that the reduction in low-arousal negative affect, along with other potential benefits of Solitude Crafting, may be attained only over longer periods following a changed relationship with solitude. Further research is needed to explore such timespans as well as other potential benefits of Solitude Crafting, for example in terms of increased desire to be alone, or aloneliness (Coplan et al., 2019), cognitive processes such as self-reflection or self-connection (Weinstein et al., 2023), or creativity (Long & Averill, 2003).

Additionally, our findings in the full study suggest lasting delayed benefits post-intervention and after participants returned to their everyday solitude. Specifically, for those who completed the comparison timepoint after Solitude Crafting, the reduction in high-arousal negative affect (stress) and the increase in both low and high-arousal positive affects persisted during their typical solitude days. This implies that the benefits from Solitude Crafting are sustained, even without further guidance or instruction on time structuring. Future studies may benefit from investigating how stable and long-lasting these benefits are, and at what point they begin to diminish.

Our findings largely align with research investigating the benefits of solitude felt *during* solitude time, such as the reduction of high-arousal negative affect (stress in our study) and increase in low-arousal positive affect (Nguyen et al., 2018; Tse et al., 2021; Weinstein et al., 2023). However, they diverge in several important respects. Contrary to previous studies that found solitude uncomfortable even for short durations (Wilson et al., 2014), or associated with increases in low-arousal negative affects like loneliness (Nguyen et al., 2018), our results indicate a significant reduction in high-arousal negative affect post-intervention. Additionally, we observed a delayed reduction in low-arousal negative affect that became evident several days after the intervention.

It is worth noting that, while the Solitude Crafting intervention yielded largely positive outcomes, it was not universally successful. There was a noticeable contrast between the ratings of how easy participants found creating their solitude plans, and how easily they were able to put that plan into practice in their daily life. Moreover, the positive correlations between these two ratings suggest that some individuals found both aspects of the crafting procedure challenging. This divergence aligns with existing literature that highlights individual differences in the ability to use cognitive reappraisal techniques (Kobylińska & Kusev, 2019; Rammensee et al., 2023; Troy et al., 2010). According to Vishkin et al. (2020), individuals gravitate toward reappraisal techniques that target the specific emotions they wish to regulate. It is possible that Solitude Crafting particularly resonated with individuals inclined to manage stress and seek tranquility and relaxation, given that solitude and the mention of "time for yourself" is often associated with such emotions. Future studies may wish to identify potential barriers to implementing solitude time and suggest alternative strategies to both represent and then model alternate effects of Solitude Crafting for those individuals who struggle to engage with their planned solitude.

It is also important to consider potential costs to unsuccessful reappraisal (Ford & Troy, 2019), as failure in applying or gaining benefit from these strategies can exacerbate negative emotional outcomes (Ford & Troy, 2019; Ford et al., 2017; Johnstone et al., 2007). In the current studies, there may have been individuals who attempted to implement Solitude Crafting but were unable to do so for various reasons (e.g., individual differences in reappraisal skill; Troy et al., 2013) or situational factors (Kobylińska & Kusev, 2019; Sheppes & Gross, 2011). Such considerations point to the importance of further research to better understand what may account for these individual differences, and how interventions like Solitude Crafting can be amended to better aid those who find themselves in situations where reappraisal is especially difficult.

Relatedly, it may not always be in the individual's best interest to reappraise their relationship with solitude. Specifically, it is important not to confuse de-stigmatizing solitude with the expectation that solitude *must* be a positive experience in order to be beneficial. In fact, there is evidence to suggest that solitude may provide space to effectively process negative emotions (Larson, 1997; Thomas, 2023). The experience of such emotions is not inherently bad, especially if solitude is followed by an upturn in positive emotions during subsequent social interactions (e.g., White et al., 2022). Future studies may wish to focus on providing guidance on how best to process negative emotions should they arise in solitude, rather than focusing on filling solitude time with only positive themed activities.

Considering these points, it is clear that interventions focused on solitude must be tailored to target aspects relevant to specific populations. As highlighted earlier, younger people often diverge from older adults in their views on solitude (Chui et al., 2014; Lay et al., 2020; Ost Mor et al., 2021). Such findings suggest that one's relationship with solitude is not set in stone, and instead may be heavily influenced by the age-appropriate roles and responsibilities that define people over the course of their lifetime (Hoppmann & Pauly, 2022).

Likewise, both group- and individual-level factors including cultural factors (Averill & Sundararajan, 2014), gender differences (Coplan et al., 2022; Hipson et al., 2021), neurodivergence (Umagami et al., 2022) or parenting (Prime et al., 2020) can significantly alter one's attitude toward and engagement with solitude. The current study offers a valuable insight into the applicability of Solitude Crafting that resonates with emerging adults. Future research may wish to build upon this foundation by exploring tailored strategies that address the distinct solitude needs of specific populations of interest.

Limitations and future directions

It is important to consider our findings in light of the following limitations. While the results suggest a broad applicability that could potentially span various age groups, from children to the elderly, our sample focused only on emerging adults aged 18–26. This age-specific focus limits our ability to generalize the observed benefits of Solitude Crafting to a wider age range. As previously discussed,

there is reason to believe that other age groups may benefit from solitude crafting, but experience said benefits in qualitatively different ways compared to the emerging adults in our sample. Future studies should aim to explore the efficacy of this intervention across diverse age groups to establish its universal applicability.

Likewise, the current study is fundamentally anchored in a Western cultural context, limiting our ability to generalize the effectiveness of the Solitude Crafting intervention to other cultures. Existing research suggests that solitude perspectives can vary greatly across cultures, such as in collectivist societies (Jiang et al., 2019), and may require different intervention strategies to those we describe here. This may be especially relevant to immigrants, who, as evidence suggests, may experience heightened loneliness if they are not well integrated into the culture of their host country (Lay et al., 2020). Such extensions of the work may be especially pertinent to emerging adults, who frequently relocate in the pursuit of employment or further study, and may feel alienated during the adaptation period (Lapierre & Poulin, 2022; Nguyen et al., 2019). Future research should examine the cross-cultural validity of the Solitude Crafting intervention, assessing the need for adaptions in the reframing process, and the efficacy of solitude-structuring guidelines for those in non-Western societies.

In addition, we relied on participants' retrospective attributions of affect, a decision which may have introduced demand characteristics (Podsakoff et al., 2003) or recall bias (Schwarz, 1999). Because our psychoeducational materials (which are available on OSF) explicitly described solitude as a means of "reducing high-arousal emotions" and "inducing feelings of calm and relaxation," participants may have inferred our hypotheses and reported emotional changes that aligned with those expectations. Participants may therefore have unintentionally reshaped their memories of earlier emotional states to match the framing we provided. Such expectancy effects are likely to amplify observed improvements in affect. Future work should consider incorporating ecological momentary assessment or unobtrusive physiological indicators (e.g., heart-rate variability) to capture affect in real time and reduce demand characteristics (Stone & Shiffman, 1994).

It is also important to note that over 70% of our sample identified as women, and our findings may not generalize to other gender groups. Previous work has suggested gender differences in how solitude is experienced and regulated: for example, women and men often employ distinct coping strategies and exhibit different affective responses when alone (Long & Averill, 2003; Matud, 2004). Because these gender-linked patterns could influence both baseline affect and receptivity to our Solitude Crafting intervention, it may be received differently by those other than women. Future research should explore the intervention with a more balanced gender composition to determine whether the affective benefits observed here replicate across a wider range of participants.

In addition, our design in the full study examined our intervention as compared to a "Solitude as Usual" comparison. We did this to compare the affective benefits of crafting solitude for improving the solitude experience. Our design therefore focused on two different conditions for solitude. However, we did not include a parallel "social group-activities" comparison to control for the benefits merely of engaging in rewarding activities. It therefore remains unclear whether the affective gains we observed uniquely reflect the experience of solitude or simply the benefits of daily engagement in intrinsically motivated leisure. In other words, participants may have experienced similar improvements in mood if they had spent 15 minutes per day planning and implementing these same activities with others. Without directly comparing a solitary-crafting condition to a social-activity condition, we cannot rule out the possibility that any structured, self-determined task, regardless of social context, would yield comparable affective benefits. Future work should therefore include a "group-activities" control group to determine whether solitude per se is responsible for the mood enhancements we report, or whether the act of intentional leisure engagement is sufficient to drive similar outcomes.

Finally, the current study did not investigate the role technology plays in shaping solitary experiences. Our focus was limited to examining solitude activities, without accounting for the way technology often obscures the distinction between being alone and being social (Halfmann et al., 2021). Prior research suggests that digital forms of communication can be beneficial for well-being under the right circumstances (Halfmann et al., 2021), and this may be especially relevant for emerging

adults and adolescents (Coplan et al., 2022). Future work could benefit from exploring the role that technology plays in how solitude is structured and how solitude (i.e., not interacting physically or virtually) can be differentiated from solitary activities that involve technology, such as passive scrolling of social media.

In conclusion, our findings highlight the transformative potential of Solitude Crafting in three key ways, each of which significantly contributes to the understanding of solitude's impact on emerging adults. First, we present robust evidence that Solitude Crafting can effectively reshape how emerging adults engage with solitude. Second, the intervention successfully modified affective states, leading to tangible improvements in emotional well-being. Unlike prior work, which largely focused on immediate experiences of solitude, our findings reveal that quality solitude has both immediate and enduring benefits that positively influence overall daily well-being. Third, Solitude Crafting was effective without necessitating a large time commitment, thereby making it a practical and accessible choice for emerging adults. The intervention was also positively received by participants, who found it an enjoyable and rewarding experience, highlighting its appropriateness for continued use. Together, our results underscore the malleability of people's perceptions of solitude and shows that even minor adjustments in solitude habits can yield enduring emotional benefits. Overall, these findings not only suggest new avenues for future research but also establish Solitude Crafting as an effective foundation for interventions aimed at positively influencing well-being over time.

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Data availability statement

The data that support the findings of this study are available on OSF at https://doi.org/10.17605/OSF.IO/N2BTC

Open scholarship

This article has earned the Center for Open Science badges for Open Data, Open Materials and Preregistered. The data and materials are openly accessible at https://doi.org/10.17605/OSF.IO/N2BTC

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