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Does dispositional preference for solitude predict better psychological outcomes during times of social distancing? Beliefs and reality

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Abstract

Objective: People value solitude for themselves. Yet little is known about how people perceive dispositional preference for solitude in others. Does dispositional preference for solitude represent a protective factor from psychological distress during times of social distancing? And do laypeople have accurate beliefs about the role of preference for solitude?

Method: To answer these questions, we conducted four studies (three preregistered, $N_{total} = 1418$) at the early and a later stage of the COVID-19 pandemic using experimental, longitudinal, and experience sampling designs.

Results: People expected targets with a higher solitude preference to be more resilient (e.g., less lonely, more satisfied with life) during social distancing, and consequently prioritize them less when allocating supportive resources for maintaining social connections (Studies 1 and 2). Compared to these beliefs, the actual difference between individuals with higher versus lower solitude preference was smaller (Study 2) or even negligible (Study 3). Did people form more calibrated beliefs two years into the pandemic? Study 4 suggested no.

Conclusions: Together, these studies show that people overestimate the role of preference for solitude in predicting others' psychological experience. As a result, solitude-seeking individuals may miss out on supportive resources, leading to higher risks for mental health issues.

KEYWORDS

COVID-19, loneliness, preference for solitude, social distancing, social perception

1 | INTRODUCTION

How do people and society at large perceive individuals who like to be alone? Although an emerging literature shows that people value the joy of solitude and voluntarily seek solitude themselves (e.g., "me time"; Bowker et al., 2017; Coplan, Hipson, et al., 2019; Long et al., 2003; Nguyen et al., 2018), relatively little is known about how people perceive others with a strong (vs. weak) preference for solitude (Ren & Evans, 2021). In this research, we examined lay beliefs about dispositional preference for solitude in the context of social distancing measures.

Social distancing measures, designed to slow down the spread of a contagious disease, have been implemented

around the globe since the start of the COVID-19 pandemic. These policies typically instruct people to stay at home as much as possible, keep a safe distance from each other, and avoid social gatherings or in-person contact with people who are not from the same household, including family, friends, colleagues, and neighbors (CDC, 2020). As such, social distancing substantially reduces in-person social contact and increases time in isolation (Bureau of Labor Statistics, 2021), raising concerns about the potential consequences of lost social connections and increased loneliness (e.g., Courtet et al., 2020; Cudjoe & Kotwal, 2020; Stephenson, 2020).

Are individuals with stronger (vs. weaker) dispositional preference for solitude more resilient during times of social distancing? And do laypeople have accurate beliefs about the role of preference for solitude? Understanding people's beliefs is important, because beliefs guide actions. In fact, when making decisions, people often prefer to rely on their beliefs and intuitions rather than on objective reality (Highhouse, 2008). Yet, inaccurate beliefs about a target's distress may keep people from recognizing the target's need for coping resources (Deska et al., 2020), from engaging in pro-social behaviors toward the target (Masten et al., 2011; Nozaki, 2015; Vrijhof et al., 2016), or from supporting policies that address stressful events (Nordgren et al., 2011). In this research, we examined how knowledge of a target's dispositional preference for solitude affects people's predictions of the target's psychological experiences during times of social distancing, and the accuracy thereof.

1.1 | Preference for solitude: lay beliefs

Preference for solitude (also termed as unsociability, Coplan & Weeks, 2010; or the affinity for aloneness, Goossens, 2014) is defined as pursuing time alone and finding it enjoyable and productive (Burger, 1995; Coplan, Ooi, & Baldwin, 2019; Cramer & Lake, 1998). Although solitude is often assumed to be an unwelcome and aversive experience (e.g., loneliness; Coplan, Hipson, et al., 2019), a growing literature shows that people voluntarily seek solitude (Chua & Koestner, 2008; Lay et al., 2020) and enjoy many potential benefits of solitude such as creativity, anonymity, and self-discovery (Bowker et al., 2017; Long et al., 2003). Note that preference for solitude represents a person's motivation for solitude without specifying why solitude is preferable. This makes preference for solitude distinct from similar constructs such as self-determined motivation for solitude, which specifically focuses on intrinsic solitude motivation (Nguyen et al., 2022; Thomas & Azmitia, 2019); shyness, which refers to the desire for solitude due to social fear (Coplan, Ooi, & Baldwin, 2019); or extraversion, which is a general trait including multiple facets such as positive affect and assertiveness (for a review, see Wilt & Revelle, 2016).

The definition of preference for solitude might lead to the assumption that this trait protects individuals from the negative consequences of social distancing measures. Indeed, anecdotal evidence suggests that people consider preference for solitude a psychological protective factor during the COVID-19 pandemic. For example, during the first wave of the pandemic, the popular press and the general public predicted that individuals who prefer being alone (e.g., introverts) would "thrive in isolation" and feel "liberated and content" (e.g., Kecmanovic, 2020; Kluth, 2020; Rogers, 2020).

Although this popular belief has not been documented in scientific research, a few pre-pandemic studies examined social perceptions of individuals who score high (vs. low) on the preference for solitude in other contexts. For example, college students hold the belief that targets who have a stronger (vs. weaker) preference for solitude are lower in the need to belong, and less negatively affected by social exclusion (Ren & Evans, 2021). When children were presented with experimentally manipulated profiles of hypothetical peers who were not playing with others, they indicated less sympathy toward the peer characterized by preference for solitude compared to a shy peer (Coplan et al., 2007; Ding et al., 2015; Zava et al., 2020). Given this preliminary evidence, we predict that laypeople expect those who have a higher (vs. lower) preference for solitude to experience less psychological distress (e.g., loneliness) during social distancing.

1.2 | Are lay beliefs accurate?

The beliefs that higher (vs. lower) solitude preference targets are less lonely during times of social distancing may not be accurate. We hypothesize that, even if there is a "kernel of truth" (Berry, 1990; Prothro & Melikian, 1955) to these beliefs, people are likely to overemphasize the role of dispositional preference for solitude when making predictions about other's social sufferings during the pandemic-related isolation.

Our hypothesis is supported by past research on lay dispositionism. Lay dispositionism, also referred to as correspondence bias or fundamental attribution error (Gilbert & Malone, 1995; Ross, 1977; Ross & Nisbett, 1991), describes laypeople's tendency to overestimate the role of dispositions (e.g., personality) and underestimate the role of situational constraints when predicting others' behavior (Epley, 2014; Kunda & Nisbett, 1986; Ross & Nisbett, 1991). For example, people are over-reliant on the information about partner's assertiveness when predicting

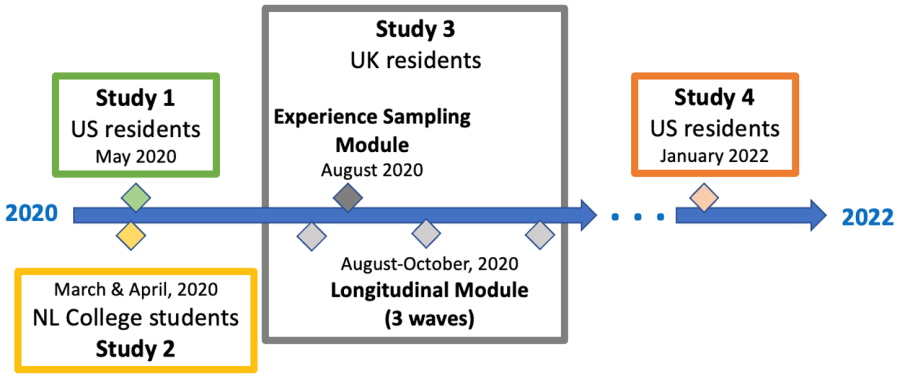

FIGURE 1 A graphical timeline of Studies 1–4.

partners' tendency to cooperate in interactive decision tasks (Cooper et al., 2015). Here, we propose that people are over-reliant on the dispositional information about others (i.e., target preference for solitude) when predicting others' subjective experience at times of social distancing.

Our hypothesis is further supported by research on stereotype (in)accuracy. People's inferences about others are often guided by stereotypes (Kunda & Thagard, 1996), defined as beliefs about the groups or categories the other person belongs to (Ashmore & Del Boca, 1981; Jussim et al., 2015). Stereotypes can be reasonably calibrated (Jussim, 2012), yet they often also lead to exaggerated group differences when the attributes being evaluated are highly relevant to the given stereotype (Epley & Eyal, 2019). For example, people overestimate the differences in political attitudes between Democrats and Republicans (a political-party stereotype relevant attribute; Westfall et al., 2015) and gender differences in social sensitivity (a gender-stereotype relevant attribute; Eyal & Epley, 2017). It is possible that people develop a set of beliefs and expectations based on others' personality and character, leading people to overestimate group differences (e.g., individuals with high vs. low preference for solitude) in stereotype-relevant attributes (i.e., subjective experience with social distancing).

Importantly, there is no clear evidence that preference for solitude protects individuals during times of social distancing. Admittedly, belonging needs cannot be met in solitude (Leary et al., 2003), suggesting that high (vs. low) solitude-preference individuals may have a lower need to belong, and thus suffer less during social isolation. In addition, high (vs. low) solitude-preference individuals find solitude to be more productive, interesting, and enjoyable (Burger, 1995), suggesting that they could be more resilient in enduring isolation. However, other work emphasizes that the need to belong is one of the fundamental and universal human needs (Baumeister & Leary, 1995). Consistent with this notion, decades of research have demonstrated that the well-being benefits of social contact and social support persist across contexts and persons (e.g., Clark & Watson, 1988; Epley & Schroeder, 2014; Kahneman et al., 2004; MacDonald & Borsook, 2010; Ren et al., 2022; Sun et al., 2019). These findings suggest that, no one—even solitude-seeking individuals—can be immune to the impact of social isolation. Finally, given that dispositional preference for solitude represents a motivation for seeking voluntary solitude, it may be a poor predictor of people's experience with solitude when solitude is not voluntary but rather a result of external circumstances (Chua & Koestner, 2008). Indeed, a study conducted at the beginning of the COVID-19 crisis (March, 2020) showed that although preference for solitude predicted a decrease in psychological ill-being across two weeks, this effect was negligible (Weinstein & Nguyen, 2020).

1.3 | Current research

In four studies, we assessed lay beliefs about the role of target preference for solitude in predicting target subjective experience during social distancing, and the accuracy of these beliefs. Across studies, loneliness is our primary outcome variable. Additional outcome variables include difficulty with practicing social distancing (Study 2) and life satisfaction (Studies 3 and 4). All four studies were conducted during the COVID-19 pandemic. Studies 1–3 were conducted at the early stage of COVID-19 (between March and October, 2020), and Study 4 was conducted at a later stage of COVID-19 (January, 2022). See Figure 1 for a graphical timeline of the studies. In Study 1, we examined the effect of target preference for solitude on people's beliefs about target experience, and whether these beliefs shape their resource allocation decisions. In Study 2, we evaluated the accuracy of people's beliefs by directly comparing participants' predicted differences between higher and lower solitude-preference targets versus the observed difference between individuals of higher versus lower solitude-preference. In Study 3, we focused our attention

on people's actual experiences by examining the role of participants' preference for solitude in predicting their experience during the pandemic using longitudinal and experience sampling designs. Finally, in Study 4, we revisited people's beliefs by examining whether people still held similarly (inaccurate) beliefs two years after social distancing measures were first introduced.

Of the four studies, three (Studies 1, 2 and 4) were preregistered. These three studies were registered prior to conducting the research. The preregistration adheres to the disclosure requirements of the institutional registry or those required for the preregistered badge with analysis plans maintained by the Center for Open Science. The links to the time-stamped preregistrations are:

Study 1: https://aspredicted.org/GCZ_IQC
Study 2: https://aspredicted.org/NOR_RCW
Study 4: https://aspredicted.org/H9M_7GJ

The preregistration forms, research materials, data, codebooks, and analysis scripts are available at the Open Science Framework: https://osf.io/a3ctq/ (Ren et al., 2020). We report all manipulations, measures, and data exclusions in these studies, as well as the method of determining the final sample size. All studies were approved by the research ethics committee at Tilburg University. All analyses were conducted using R (R Core Team, 2020).

2 | STUDY 1

In the first study, we examined the effect of target preference for solitude on lay beliefs about target loneliness at times of social distancing. Participants were randomly assigned to evaluate a hypothetical target who was depicted to have a high or a low preference for solitude. Our hypothesis was that people would expect individuals with a high (vs. low) preference for solitude to suffer less from loneliness during social distancing, and subsequently allocate these individuals less supportive resources. As resource allocation decisions may simply be guided by target likability instead of expected target loneliness (and people may generally dislike solitude seeking individuals; Ren & Evans, 2021), we also measured target likability and tested it as an alternative mediator to expected target loneliness.

This study was conducted with a sample of US residents, on May 3, 2020, during the first wave of the COVID-19 pandemic. On March 13, 2020, the US declared a national emergency due to COVID-19. By April 20, at least 42 US states were imposing social distancing measures restricting gatherings and social contact, affecting 95% of its population (Mervosh et al., 2020).

This study was preregistered: https://aspredicted.org/GCZ_IQC

2.1 | Method

2.1.1 | Participants

We recruited US residents on Prolific Academic. Based on a power analysis for the primary outcome variable of target loneliness (Cohen's $d = .5$, 80% power, $\alpha = .05$, two-tailed test), we needed a minimum of 128 participants and thus preregistered to recruit at least 150 participants. After pre-registering the study, but before collecting any data, we decided to expand the planned sample size to 300 to account for the testing of multiple hypotheses (Maxwell, 2004). And 301 participants completed the survey; three were removed from analyses due to attention check failure (one in the high preference for solitude condition, and two in the low preference for solitude condition).[1] The final sample consisted of 298 participants ($M_{age} = 32.7$, $SD_{age} = 12.39$, range 18–80, one did not report age; 142 male, 148 female, 5 non-binary, and 3 preferred not to respond). A sensitivity power analysis in G*Power 3.1 (two-tailed, $\alpha = .05$) showed that, for our primary outcome (i.e., loneliness), this sample size would provide 80% power to detect an effect of Cohen's $d = .33$.

2.1.2 | Procedure and materials

Participants were first introduced to a fellow Prolific participant named Robin (a gender-neutral name). Robin was depicted to have either a lower ($n = 148$) or a higher ($n = 150$) level of the psychological trait "front-brainedness" than most other Prolific participants. The fictional trait described individual differences in preference for solitude: "People with a higher level of front-brainedness are more likely to find time spent alone productive and enjoyable, and make more effort to seek alone time than people with a lower level of front-brainedness." These descriptions were developed based on the items from the Preference for Solitude Scale (Burger, 1995) and the three-factor structure of preference for solitude (Cramer & Lake, 1998): need for solitude, enjoyment of solitude, and productivity during solitude. The fictional term (front-brainedness), borrowed from Critcher et al. (2015), was used to avoid demand effects.

Next, participants were asked to evaluate the extent to which Robin felt lonely due to the social distancing policies during the COVID-19 pandemic (3 items; $\alpha = .97$; e.g., "Because of the social distancing measures, Robin would feel lonely." 1 = *not at all*, 5 = *extremely*) and Robin's likeability (3 items; $\alpha = .81$; e.g., "Robin is likeable." 1 = *not at all*, 5 = *extremely*). The order of these two measures was random for each participant.[2]

Next, participants learned about a program called "Stay Connected", the goal of which was to provide resources to help people stay socially connected via internet during the pandemic. Participants were asked to indicate to what extent they would grant Robin priority access to the program if they served on its committee board (1 = *most other Prolific participants should be prioritized over Robin*, 5 = *Robin should be prioritized over most other Prolific participants*).

Finally, participants completed a single-item measure to indicate their own level of preference for solitude ("*I have a higher [vs. lower] level of front-brainedness than most other Prolific participants*".). This measure allowed us to explore whether participants' own preference for solitude scores moderated their beliefs about Robin, and their resource allocation decisions.

2.2 | Results and discussion

A visual inspection of the data is presented in Figure 2 using raincloud plots (Allen et al., 2019). Participants expected the high (vs. low) solitude preference target to suffer less from loneliness (high: $M = 1.79$, $SD = .78$ vs. low: $M = 3.92$, $SD = 1.25$), $t(245.81) = -17.71$, $p < .001$, $d = 2.06$ [1.78, 2.34]; rated them to be more likable (high: $M = 3.63$, $SD = .70$ vs. low: $M = 3.30$, $SD = .60$), $t(290.57) = 4.41$, $p < .001$, $d = .51$ [.28, .74]; and assigned them a lower priority access to the program (high: $M = 2.44$, $SD = .85$ vs. low: $M = 3.57$, $SD = .92$), $t(293.37) = -11.07$, $p < .001$, $d = 1.28$ [1.03, 1.53].

Next, we conducted a multiple mediation model testing expected loneliness and target likeability as simultaneous mediators (Preacher & Hayes, 2008). We used R package lavaan (version 0.6.6; Rosseel, 2012), and requested the bias-corrected and accelerated (BCa) bootstrap intervals based on 5000 re-samples. Both indirect effects had confidence intervals that did not contain 0 (Figure 3). Interestingly, the indirect effects were of opposite sign: high (vs. low) preference targets were rated higher in likeability; and higher likeability was associated with higher priority ratings. At the same time, high (vs. low) preference targets were expected to suffer less from loneliness; and lower expected loneliness was associated with lower priority ratings for the social support program. Further comparing the two pathways showed that the magnitude of the indirect effect via target loneliness (vs. target likability) was about 9 times as large (.75 vs. .08; $b = .67$ [.44, .93], $p < .001$).

Finally, we explored whether participants' own level of preference for solitude moderated their beliefs and their resource allocation decisions. Analyses showed that regardless of participants' own level of preference for solitude, they held the beliefs that high (vs. low) preference targets were less lonely during times of social distancing; and they granted these individuals less access to supportive resources. See Supplementary Materials for details.

In summary, these results showed that people expect high (vs. low) preference for solitude others to suffer less from loneliness during social distancing; and subsequently allocate these individuals—despite their higher perceived likeability—less resources to help maintain social connections during the pandemic.

3 | STUDY 2

Study 1 has shown that people expect higher (vs. lower) solitude preference individuals to be less lonely during times of social distancing. However, is this belief accurate? To answer this question, Study 2 directly compared participants' beliefs about the role of solitude preference with the actual role of solitude preference.

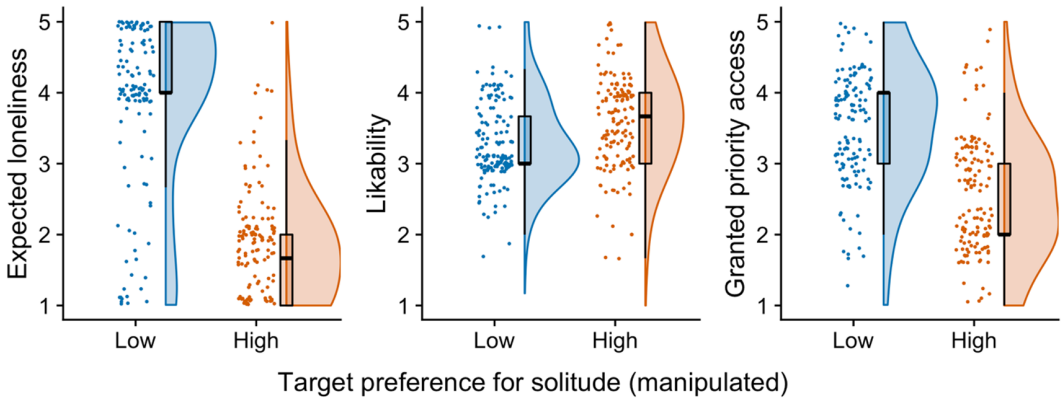

FIGURE 2 The effects of target preference for solitude on expected target loneliness, target likeability, and participant granted support (Study 1). Raincloud plots are used to visualize (from left to right) raw data, key summary statistics, and the distribution of the data (Allen et al., 2019). The effects of the manipulation on all three outcome variables were statistically significant (p's < .001).

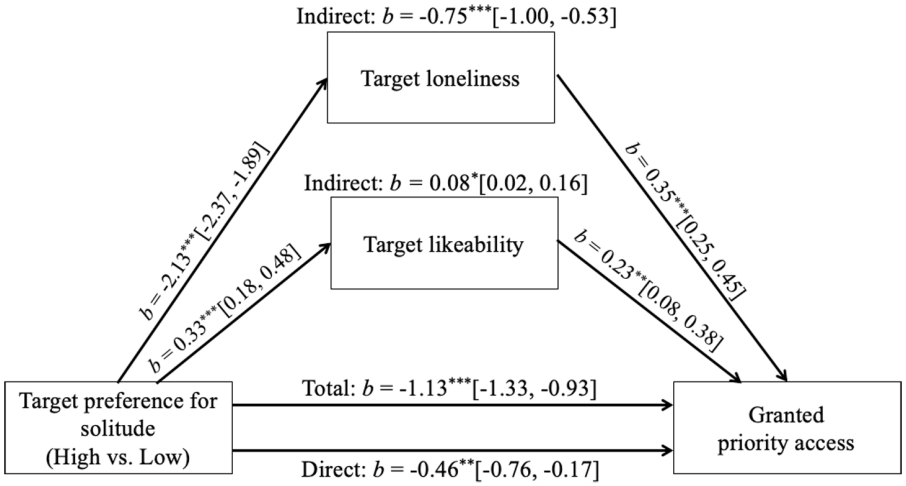

FIGURE 3 Multiple mediation model (Study 1). *b*s are unstandardized. 95% confidence intervals are in brackets. Granted priority access: priority access to a social support program. ***$p < .001$; *$p < .05$.

Participants were randomly assigned to complete surveys assessing either "beliefs" or "experiences". Participants who completed the "beliefs" survey were presented with a target who was depicted to have either a high or a low preference for solitude. Participants then estimated target loneliness during social distancing. Participants who completed the "experiences" survey reported their preference for solitude by responding to a dichotomous measure (low vs. high), and indicated their loneliness during social distancing. This design allowed us to directly compare participants predicted difference between high versus low solitude preference individuals against observed difference between individuals of high versus low solitude preference. In addition to loneliness, we also measured difficulty with practicing social distancing as an outcome.

We collected a sample of college students at a university located in North Brabant, the Netherlands. The Dutch government started implementing the social distancing policies in North Brabant, the most affected province on March 9. In the following week, stricter rules were introduced nationwide, up until May 11. Data was collected between March 23 and April 20, while the strictest distancing rules were in place.

This study was preregistered: https://aspredicted.org/NOR_RCW

3.1 | Method

3.1.1 | Participants

Undergraduate students at a university in North Brabant, the Netherlands, participated in the study online for course credits. As preregistered, we collected data for four weeks, two weeks longer than the standard procedure at the university, due to the uncertainty with data collection during campus shutdown. And 519 students completed the survey, and eight were removed from analyses due to attention check failure (seven from the "beliefs" survey; one from the "experiences" survey). The final sample consisted of 511 participants ($M_{age} = 20.85$, $SD_{age} = 2.72$, range 18–37; 142 male, 368 female, 1 other). Of this sample, 255 participants completed the survey assessing beliefs, and 256 participants completed the survey assessing actual experiences.

We first ran two independent t-tests to estimate the effect of solitude preference using "beliefs" data and "experiences" data. Sensitivity power analyses in G*Power 3.1 (two-tailed, $\alpha = .05$) showed that, for our primary outcome (i.e., loneliness), the sample of the "beliefs" survey would provide 80% power to detect an effect of Cohen's $d = .18$; the sample of the "experiences" survey would provide 80% power to detect an effect of Cohen's $d = .36$. We then conducted a series of one-sample t-tests to compare participants' beliefs about the two hypothetical targets who had a high versus low preference for solitude against the actual scores obtained from the participants who were high or low in preference for solitude. A sensitivity power analysis in G*Power 3.1 (two-tailed, $\alpha = .05$) showed that the sample of the "beliefs" survey would provide 80% power for each t-test to detect a minimum effect of Cohen's $d = .18$.

3.1.2 | Procedure and materials

Participants were randomly assigned to complete a survey assessing either beliefs or experiences. Participants in the "beliefs" survey learned about a fictional trait of front-brainedness that reflects preference for solitude (see Study 1 for the description of front-brainedness). They were

then introduced to two fellow students who were depicted to have a higher or a lower level of front-brainedness than most other students at the university. Next, participants estimated how lonely each target student was due to social distancing by completing a 3-item scale (α_{low} = .88, α_{high} = .84; e.g., "How lonely would the social distancing measures make the student feel?" 1 = *not at all*, 5 = *extremely*), and how difficult it has been for each target individual to practice social distancing (1 = *not at all*, 5 = *extremely*). The order of the two targets was random for each participant.

Participants in the "experiences" survey learned about the same fictional trait, and completed the single-item solitude measure (same measure we used in Study 1) to report being lower (n = 103) or higher (n = 153) in this trait compared to most other students at the university. Then, participants completed the same questions from the "beliefs" survey, indicating how lonely they have been due to social distancing (α = .82), and how difficult it has been for them to practice social distancing.

Finally, to validate the single-item solitude measure, all participants completed the Preference for Solitude scale (Burger, 1995) at the end of the study. The scale consisted of 12 forced-choice items (e.g., "I enjoy being around people [coded as 0] vs. I enjoy being by myself [coded as 1]"). Items were averaged to form a single index of preference for solitude (α = .77). The single-item measure and Burger's measure correlated highly with each other, r = .87, p < .001, showing strong convergence between the two.

3.2 | Results and discussion

Did people have an accurate understanding of the role of preference for solitude in predicting others' experience during social distancing? Participants expected targets with a high (vs. low) preference for solitude to be less lonely (high: M = 1.92, SD = .7 vs. low M = 4.24, SD = .71), $t(254) = -32.54$, p < .001, d = 3.30 [2.80, 3.81]; and to experience less difficulty with practicing social distancing (high: M = 1.73, SD = .79 vs. low: M = 4.11, SD = .88), $t(254) = -29.39$, p < .001, d = 2.87 [2.43, 3.30]. Compared to lay beliefs, the actual difference between participants with a high (vs. low) preference for solitude was smaller: loneliness (high: M = 2.75, SD = .92 vs. low: M = 3.33, SD = .82), $t(235.14) = -5.32$, p < .001, d = .66 [.41, .92]; difficulty (high: M = 2.24, SD = 1.03 vs. low: M = 3.06, SD = .99), $t(224.43) = -6.38$, p < .001, d = .81 [.55, 1.07]. These results showed that participants overestimated the difference between individuals who had a low versus high preference for solitude. These results are illustrated in Figure 4.

Was participants' inaccuracy (i.e., overestimation of the role of others' preference for solitude) driven by their miscalibrated beliefs about others with high or low preference for solitude? To answer this question, we conducted a series of one-sample t-tests to compare participants' beliefs about the two hypothetical targets who had a high versus low preference for solitude against the actual scores obtained from the participants who were high or low in preference for solitude. Participants underestimated how lonely individuals with a high preference for solitude were due to social distancing (estimated M = 1.92, SD = .70 vs. actual 2.75, $t[254] = -18.97$, p < .001, d = 1.19 [.92, 1.46]) and underestimated how difficult social distancing practice was for these individuals (estimated M = 1.73, SD = .79 vs. actual 2.24, $t[254] = -10.46$, p < .001, d = .65 [.40, .91]). In contrast, participants overestimated how lonely individuals with a low preference for solitude were due to social distancing (estimated M = 4.24, SD = .71 vs. actual 3.33, $t[254] = 20.59$, p < .001, d = 1.29 [1.02, 1.56]) and overestimated how difficult social distancing practice was for these individuals (estimated M = 4.11, SD = .88 vs. actual 3.06, $t[254] = 19.14$, p < .001, d = 1.20 [.93, 1.47]).

Finally, using participants' own solitude scores we collected at the end of the study, we explored whether participants (in the beliefs survey) would be more accurate at estimating similar others' experience (e.g., do participants with a high preference for solitude judge a target with a high preference for solitude more accurately than participants with a low preference for solitude?). No evidence supported this possibility, suggesting that participants of varying levels of preference for solitude hold equally (in) accurate beliefs about the role of preference of solitude in predicting others' experience. More details about this analysis are provided in Supplementary Materials.

In summary, Study 2 showed that people overestimated the role of others' preference for solitude when judging others' subjective experience with social distancing: Although the observed difference between high versus low solitude-preference targets was in the same direction as laypeople expected, the magnitude of its effect was smaller than people's expectations. More concretely, people thought that low solitude-preference individuals experienced more loneliness and more difficulty with distancing compared to the actual experience of low solitude-preference individuals; and that high solitude-preference individuals experienced less loneliness and less difficulty with distancing compared to the actual experience of high solitude-preference individuals.

Studies 1 and 2 converged to show that people expect high solitude preference to predict less loneliness during social distancing. Study 2 also provided first insight into the actual associations between solitude preference and psychological outcomes during social distancing, suggesting that these associations might be smaller than people think. However, there are reasons to believe that the design

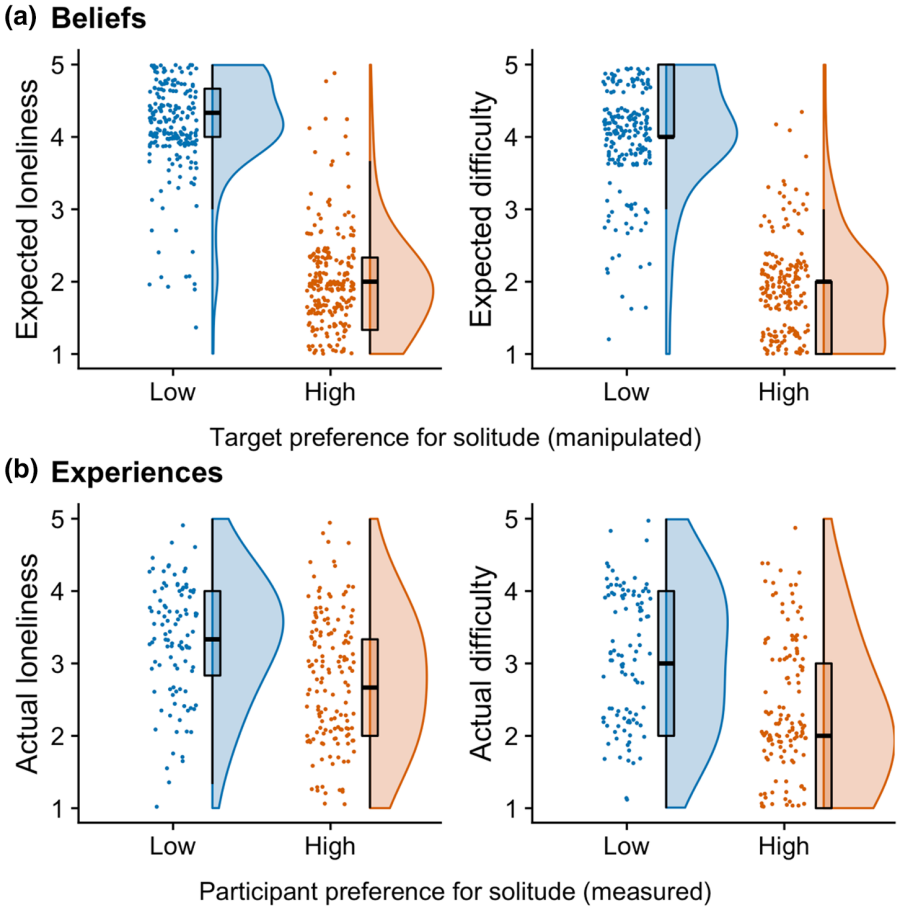

FIGURE 4 Expected and actual role of preference for solitude in loneliness and difficulty with distancing (Study 2). Raincloud plots are used to visualize (from left to right) raw data, key summary statistics, and the distribution of the data (Allen et al., 2019). In the "beliefs" survey, the effects of the manipulation on both outcome variables were statistically significant (p's < .001). In the "experiences" survey, the two groups significantly differed from each other on both outcome variables (p's < .001). Crucially, the effect sizes observed in the "beliefs" survey (loneliness d = 3.30, difficulty d = 2.87) were larger than those in the "experiences" survey (loneliness d = .66, difficulty d = .81).

used in Study 2 could have produced inflated estimates of the associations between preference for solitude and loneliness. First, the "experiences" survey simply measured the two variables of interest (preference for solitude, loneliness) without including any relevant covariates. Thus, the observed difference between high versus low solitude preference individuals may be due to unmeasured third variables, such as the Big Five or socio-demographics (Burger, 1995). Second, in the "experiences" survey, participants reported their loneliness right after completing the solitude measure. People's beliefs about preference for solitude may have guided them to report their loneliness in a way that is consistent with their beliefs (e.g., "if I am someone who likes solitude, I must have not been lonely due to distancing"). Our next study is designed to address these limitations and obtain more accurate estimates of the actual size of the association between the preference or solitude and the experience of loneliness during the pandemic.[3]

4 | STUDY 3

We recruited a sample of UK residents during the COVID-19 pandemic. Data were collected between August and October, 2020. In the UK, social distancing rules were implemented in late March, 2020 and continued throughout the year. Restrictions were slightly more relaxed in August and increasingly tightened in September and October. Participants completed two modules: a three-wave longitudinal module across three months (with one month lag), and an Experience Sampling Module (ESM) over seven days (that started directly after wave 1). This data structure allowed us to explore whether solitude preference predicts chronic levels of loneliness across the three months span (longitudinal module) during the pandemic as well as momentary experiences of loneliness across seven days (ESM module). We also measured life satisfaction as an additional outcome variable in both modules.

4.1 | Method

4.1.1 | Participants

We recruited UK residents on Prolific Academic. And 454 participants completed the initial survey (Time 1); 308 participants who passed an attention check[4] were invited to complete the rest of the study and composed our final sample (M_{age} = 34.53, SD_{age} = 12.31, range 18–76; 76% female). Of these, 300 (97%) completed Time 2 survey, 296 (96%) completed Time 3 survey, and 272 (88%) completed at least one momentary assessment in the experience sampling module. Among participants who completed at least one momentary assessment, the average number of momentary assessments completed was 29 (SD = 7.83; out of 35 possible assessments). Our analyses were based on 894 observations from 308 participants, and 7720 momentary assessments from 265 participants (seven participants were removed due to errors in ID entry).[5]

4.1.2 | Procedure and materials

At each time point of the longitudinal module, participants completed measures assessing preference for solitude (predictor), loneliness and life satisfaction (outcomes). Participants also completed measures of covariates (i.e., demographics, the Big Five traits, and current situation during the pandemic) at each time point. The experience sampling module started on the day following the Time 1 survey. For up to five times a day and seven days, participants reported their feelings of loneliness and life satisfaction in the past hour (outcomes). Because social interaction is an established predictor of loneliness and life satisfaction in past research (e.g., Sun et al., 2019), we also measured whether participants were interacting with others in the past hour as a covariate. In both modules, the order of the measures (as well as several measures that are irrelevant to the current research[6]) was randomized for each assessment. See Table 1 for the relevant variables and measures in both modules.

4.2 | Results and discussion

We first examined whether preference for solitude was associated with loneliness and life satisfaction using the three-wave longitudinal data (a correlation matrix is included in Supplementary Materials). To account for the nested data structure (observations are nested within participants), we used multilevel models with random intercepts estimated for each participant. We included statistical controls (i.e., covariates) to reduce confounding biases. Demographic variables, the basic personality dimensions (i.e., the Big Five), and participants' situation during the pandemic (e.g., living alone) are possible confounders (or variables on a backdoor path) between the predictor and the outcomes and therefore they were adjusted for in the models. For example, when estimating the effect of participants' preference for solitude on their loneliness levels, it is possible that the Big Five traits are confounders (i.e., the Big Five traits affect both the predictor, preference for solitude, and the outcome variable, loneliness). Adjusting for the Big Five traits would block these backdoor paths. Take living alone as another example. It might be possible that living alone and preference for solitude are correlated (due to unmeasured common causes), and living alone affects people's loneliness levels. In this case, living alone is a variable on a backdoor path and adjusting for this variable would block this path.

We added the covariates in four steps. Specifically, for each outcome variable (i.e., loneliness, life satisfaction), we estimated four models. Model 1 included preference for solitude as the only predictor. Covariates were added to the subsequent models: Model 2 added demographics variables[7]; Model 3 further added the Big Five traits; and Model 4 finally added the pandemic-related variables. In all analyses, the outcome variables were rescaled to range from 1 to 5 to be consistent with the range of the outcomes in Studies 1 and 2. Additionally, all predictors were rescaled to range from 0 to 1. We used R packages lme4 (version 1.1.23; Bates et al., 2014) and the lmerTest (version 3.1.2; Kuznetsova et al., 2015). The unstandardized regression coefficients are plotted in Figure 5.

Results showed that preference for solitude was not a significant predictor of either loneliness or life satisfaction across models (p ranged from .086 to .583).[8]

Next, we examined whether preference for solitude was associated with momentary loneliness and momentary life satisfaction using experience sampling data (a correlation matrix is included in Supplementary Materials). Following the analytic approach above, we ran five multilevel models for each outcome variable, with random intercepts estimated for each participant (momentary assessments are nested within participants). Model 1 included preference for solitude as the only predictor; Model 2 added social interaction in the past hour (a robust predictor of the outcomes based on past research; e.g., Ren et al., 2022) as a covariate; Models 3–5 subsequently added the covariate sets described above. The unstandardized regression coefficients are plotted in Figure 6. Results showed that for both outcomes, preference for solitude was a significant predictor in the first three models. However, these effects were in the opposite direction of people's beliefs: participants who had a higher (vs. lower) preference for solitude

TABLE 1 Study 3 variables and measures.

Variable	Measure
Longitudinal module	
Preference for solitude	The same scale we used in Study 2 (α: T1 = .85, T2 = .83, T3 = .85; Burger, 1995)
Loneliness	The UCLA loneliness scale (Russell et al., 1978). 20 items (e.g., "I feel completely alone," 0 = I never feel this way; 3 = I often feel this way). α: T1 = .95, T2 = .95, T3 = .96
Life satisfaction	One item: "Taking all things together, how satisfied are you with your life as a whole?" 1 = extremely dissatisfied, 10 = extremely satisfied
Age	(in years)
Gender	Male, female, other (recoded: 0 = female; 1 = non-female)
Education	1 = less than high school degree, 2 = high school graduate, 3 = some college but no degree, 4 = associate degree in college, 5 = bachelor's degree in college, 6 = Master's degree, 7 = Doctoral degree/Professional degree (JD, MD). Because some of the response options were only adopted by a few participants in our sample, the education variable was recoded as: 0 = high school degree or lower, 1 = college degree, 2 = master degree or higher
Political orientation	1 = extremely liberal, 10 = extremely conservative (reverse coded)
Religion	1 = not at all religious, 10 = very religious
Employment	Work (home office), work (no home office), unemployed, student, retired, other (recoded: 1 = unemployed; 0 = other responses)
Income	Please indicate the answer that includes your entire household income in (previous year) before taxes. 12 options were provided, ranging from 1 = less than $10,000 to 12 = $150,000 or more. Because some of the response options were only adopted by a few participants in our sample, the income variable was recoded as: 0 = less than $19,999, 1 = $20,000 to $39,999, 2 = $40,000 to $69,999, 3 = $70,000 or more
Big Five traits	the 20-item International Personality Item Pool (Donnellan et al., 2006); 4 items per domain (1 = very inaccurate, 5 = very accurate). α range = .66–.86
Single	What is your relationship status? married/live together with a partner, in a steady relationship but not living together, dating someone, single. (recoded: 1 = single, 0 = other responses)
Living alone	Do you live: alone, with a partner/spouse, with a child(children), with my parent(s), with my in-law(s), with roommate(s), other. (recoded: 1 = alone, 0 = other responses)
Care-taking duties	Do you have duties of taking care of someone else in your household (e.g., your children, sick relatives etc.) 1 = yes, 0 = no
Infection	Have you been diagnosed with COVID-19? yes, no Do you suspect that you currently have a COVID-19 infection? yes, no (recoded into one variable: 1 = yes to at least one question, 0 = no to both questions)
Perceived COVID threat	3 items: How much of a threat, if any, is the COVID-19 outbreak for your personal health (financial safety/day-to-day life) in your local community? 1 = not a threat, 4 = major threat
Experience sampling module	
Momentary loneliness	2 items (r = .41): During the last hour, to what extent have you felt lonely (connected)? 1 = not at all, 5 = a great deal
Momentary life satisfaction	During the last hour, to what extent have you felt satisfied with your life? 1 = not at all, 5 = a great deal
Momentary social interactions	During the last hour, were you interacting with others? 1 = yes, 0 = no[a]

[a]Future research should consider clarifying the type of interactions for participants (e.g., "were you interacting with others (in-person or virtual)?").

reported *more* momentary loneliness and *less* momentary life satisfaction. Importantly, these effects became nonsignificant when additional covariates were added (Models 4 and 5).[9]

To summarize, analyses of the multi-wave data and the experience sampling data converged to show that preference for solitude was not a robust predictor of loneliness or life satisfaction during social distancing. Combined with the findings of Studies 1 and 2, these results provide further support to the idea that lay people (severely) overestimate the degree to which preference for solitude shapes the experience of loneliness in others.

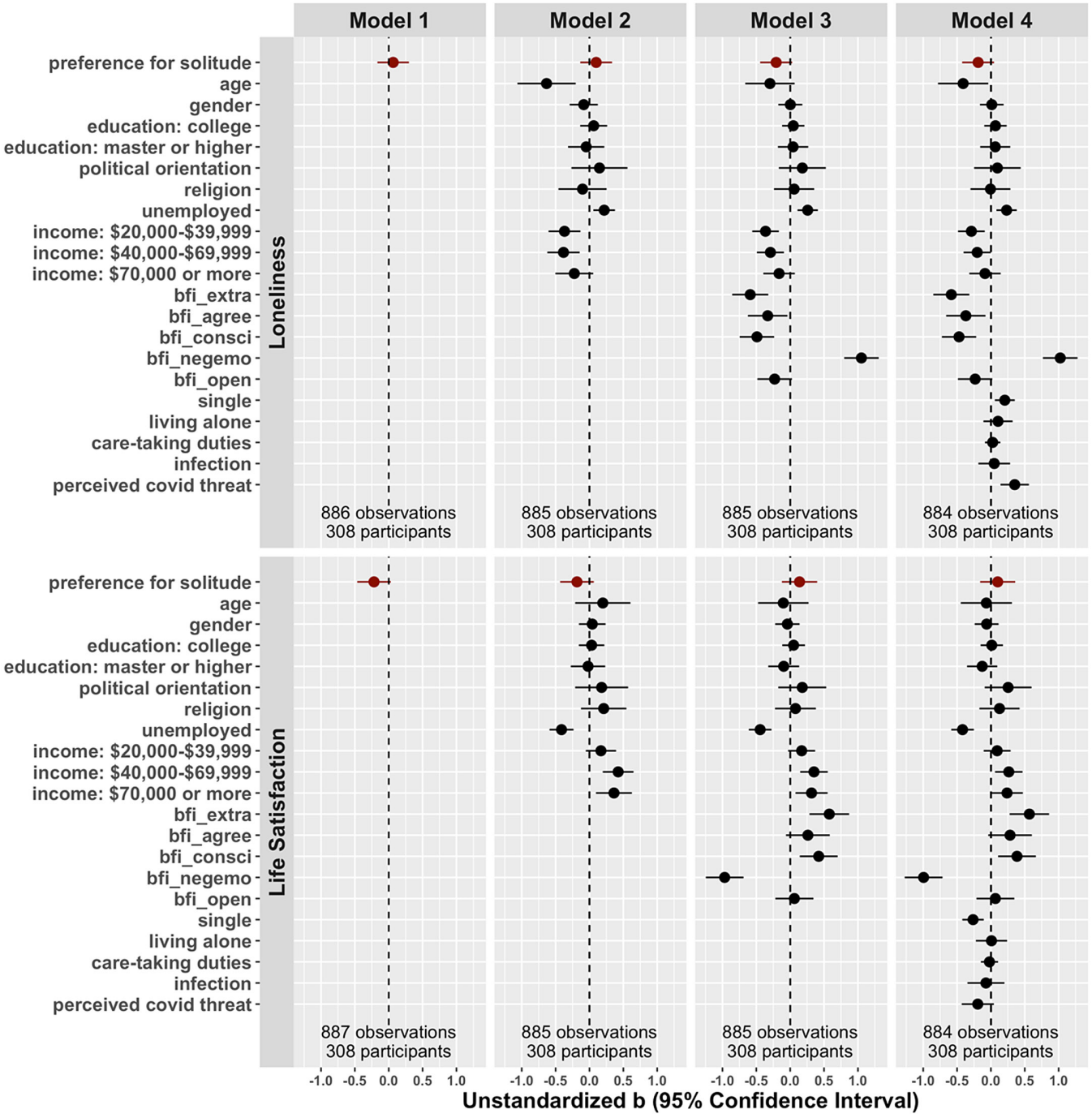

FIGURE 5 Multilevel models predicting loneliness and life satisfaction (Study 3 three-wave longitudinal module). All predictors were rescaled to range from 0 to 1. Confidence intervals of unstandardized *b*s that exclude zero indicate statistical significance at the .05 level.

5 | STUDY 4

Studies 1–2 showed that people (erroneously) expected high (vs. low) solitude-preference others to experience better psychological outcomes during social distancing. However, as these studies were conducted during the early stages of the pandemic, it is possible that, as the pandemic continued, people may have formed a better understanding of others' actual experiences during times of distancing (e.g., through their lived experiences, observations, and media). Is it possible that people have a more calibrated belief about solitude seeking others' psychological experience two years into the pandemic? To answer this question, we conducted Study 4 in January, 2022.

Similar to Study 1 (and the beliefs survey of Study 2), participants were randomly assigned to evaluate a person

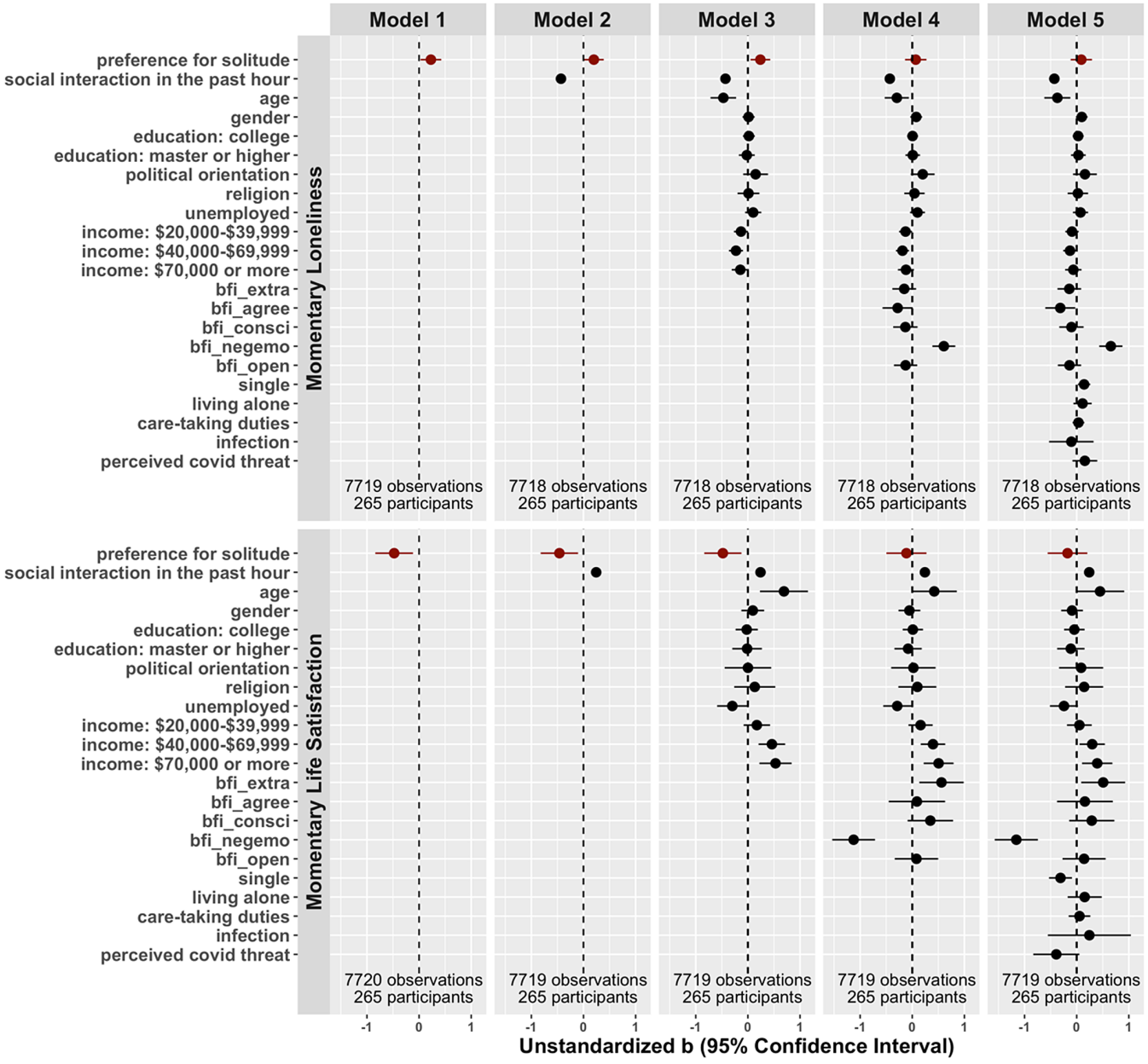

FIGURE 6 Multilevel models predicting momentary loneliness and momentary life satisfaction (Study 3 experience sampling module). All predictors were rescaled to range from 0 to 1. Confidence intervals of unstandardized bs that exclude zero indicate statistical significance at the .05 level.

who was depicted to have either a higher or a lower level of preference for solitude. Participants were then asked to report their beliefs about the target's loneliness and life satisfaction during times of distancing.

Study 4 also had several improvements relative to Study 1 (and the beliefs survey of Study 2). First, the target's preference for solitude was manipulated using simulated personality scale responses. This manipulation was recently developed based on actual responses to a revised version of the preference for solitude scale (Burger, 1995; Ren & Evans, 2021), making it a more ecologically valid manipulation than the verbal description we used in the first two studies. Second, in Studies 1 and 2, participants only received information about the target's personality, which might have naturally led participants to use this information when making predictions about target psychological experience of the pandemic. Thus, here, in addition to the relevant information about the target's solitude preferences, participants received other background information, such as socio-demographics, future plans and preferences (identical across conditions) about the target. Third, we included the Perceived Awareness of the Research Hypothesis (PARH) Scale (Rubin et al., 2010), in order

to check whether our results could be driven by demand effects.

Measures, data collection, and analyses were preregistered: https://aspredicted.org/H9M_7GJ

5.1 | Method

5.1.1 | Participants

We recruited US residents, who did not participate in Study 1 on Prolific Academic. To achieve 80% overall power with two outcome variables (loneliness, life satisfaction), we powered each analysis with 90% power (Maxwell, 2004). To detect a medium effect (cohen's $d = .4$, 90% power, $\alpha = .05$, two-tailed test), the minimum sample size would be 266 participants. Anticipating data exclusions due to missing values and attention check failures, we aimed to recruit 300 participants.

A total of 302 participants completed the survey, and one (in the low preference for solitude condition) was removed from analyses due to attention check failure (we used the same attention check question as in Study 1). The final sample consisted of 301 participants ($M_{age} = 36.45$, $SD_{age} = 12.08$, range 18–82, one did not report age; 148 male, 147 female, 5 non-binary, and 1 preferred not to respond). Participants were randomly assigned to evaluate a target with a low ($n = 150$) or a high ($n = 151$) preference for solitude.

5.1.2 | Procedure and materials

Participants were first introduced to a person who ostensibly took part in one of the studies we conducted in the past. Participants received a short profile of the target person. The profile consisted of two parts. The first part was a brief self-introduction that was identical in both conditions:

> I'm a college student. I'm finishing up my first year of a difficult science curriculum in university. I also work at a grocery store as a part-time thing and earn some money online in my free time. I have a lot planned for my future, and it's really exciting. I want to become a doctor with a family of lots of little dogs. My favorite season of the year is Fall because it's nice outside.

After receiving this description, participants were presented with a completed questionnaire, ostensibly filled in by the target person. The questionnaire was a revised preference for solitude scale (Burger, 1995; Ren & Evans, 2021). The items of the scale and the hypothetical target's responses to the scale were presented. The title of the scale was not disclosed to avoid demand effects. To make it clear that the target was reporting their general preference in regular, non-COVID circumstances, participants received explicit instruction that this target profile was collected a few years ago, before the pandemic.

The manipulation (responses to the questionnaire depicting a low and a high solitude-preference target) was created based on the preference for solitude scores obtained in a sample of college students before the pandemic ($N = 473$; details see Ren & Evans, 2021; Study 5), with the high (vs. low) preference for solitude condition reflecting the average responses of the students who had a higher (vs. lower) preference for solitude (one standard deviation above vs. below the mean).

After viewing the target's profile, participants were presented with a short description of the COVID-19 pandemic and the social distancing measures. Participants were asked to evaluate the target person's loneliness during times of social distancing (3 items; $\alpha = .96$; e.g., "During times of social distancing, this person felt lonely."; 1 = *not at all*, 5 = *extremely*) and the person's life satisfaction during distancing ("During times of social distancing, this person felt satisfied with their life." 1 = *not at all*, 5 = *extremely*). The order of these items was random for each participant.

To check the possibility of demand effects, participants completed the PARH Scale (4 items; $\alpha = .92$, e.g., "I knew what the researchers were investigating in this research"; 1 = strongly disagree, 7 = strongly agree; Rubin et al., 2010). Finally, participants reported their gender and age.

5.2 | Results

A visual inspection of the data is presented in Figure 7 using raincloud plots (Allen et al., 2019). Participants expected the high (vs. low) solitude preference target to suffer less from loneliness (high: $M = 1.91$, $SD = .81$ vs. low: $M = 4.00$, $SD = .74$), $t(297.25) = -23.45$, $p < .001$, $d = 2.70$ [2.39, 3.02], and have higher life satisfaction (high: $M = 3.73$, $SD = .82$ vs. low: $M = 2.19$, $SD = .85$), $t(298.6) = 15.92$, $p < .001$, $d = 1.84$ [1.56, 2.11].

Were these findings due to demand effects? Following Rubin (2016), we performed a series of analyses and obtained no evidence that the observed results were influenced by demand characteristics. Specifically, the mean PARH score ($M = 3.91$ [3.73, 4.09]) did not significantly differ from the midpoint of the scale (4), $t(300) = -1.01$, $p = .312$, showing no evidence that participants agreed that they were aware of the research hypotheses.

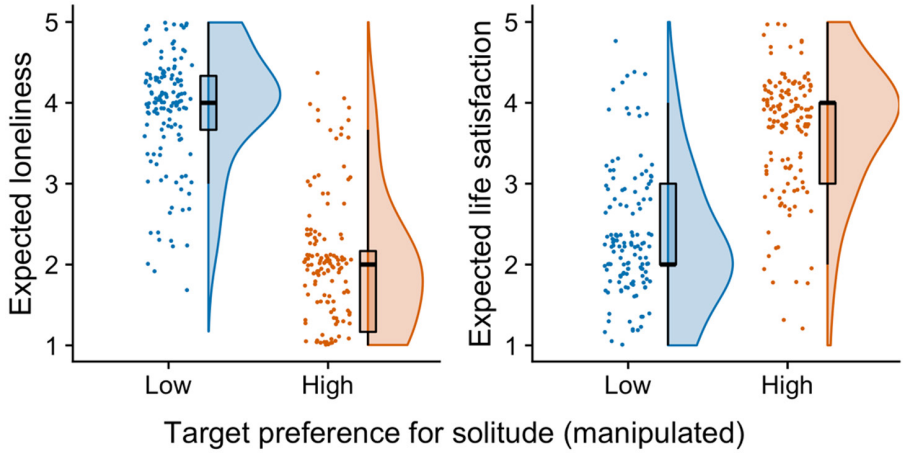

FIGURE 7 The effects of target preference for solitude on expected target loneliness and target life satisfaction (Study 4). Raincloud plots are used to visualize (from left to right) raw data, key summary statistics, and the distribution of the data (Allen et al., 2019). The effects of the manipulation on both outcome variables were statistically significant (p's < .001).

Moreover, neither outcome variable (loneliness, life satisfaction) was significantly correlated with PARH scores (loneliness: $r = .03$ [−.08, .14], $t(299) = .56$, $p = .577$; life satisfaction: $r = -.003$ [−.12, .11], $t(299) = -.05$, $p = .961$). In addition, repeating our main analysis after removing participants with high PARH scores (i.e., one standard deviation above the mean, remaining $n = 245$) showed that the effect of the manipulation was robust and remained similar in size (loneliness: $d = 2.65$ [2.30, 2.99], life satisfaction $d = 1.85$ [1.55, 2.15]). Finally, for each outcome, we used PARH scores as a covariate, and tested the effect of the manipulation in a regression model with and without the covariate. Results showed that including the covariate barely changed the estimate of the effect of the manipulation (loneliness: $b = -2.097$ without PARH as a covariate, $b = -2.099$ with PARH as a covariate; life satisfaction: $b = 1.535$ without PARH as a covariate, $b = 1.539$ with PARH as a covariate).

To summarize, Study 4 replicated the main finding of Study 1 using a more ecologically valid manipulation and provided evidence against the possibility of demand effects. Importantly, our results showed that two years into the COVID-19 pandemic, people (still) relied on others' dispositional preference for solitude when thinking about others' psychological experience during distancing times.

6 | GENERAL DISCUSSION

At the beginning of the COVID-19, the popular press portrayed individuals who prefer solitude as "liberated and content" psychological beneficiaries of the social distancing measures (e.g., Kecmanovic, 2020; Kluth, 2020; Rogers, 2020). Do lay people perceive high solitude-preference individuals as such and do these individuals actually experience less psychological distress during social distancing? To answer these questions, we examined lay beliefs about the role of dispositional preference for solitude in predicting others' psychological experience with social distancing, and the accuracy of these beliefs. Across four studies involving a total of 1418 participants from the US, the UK, and the Netherlands, using a variety of methods with experimental, longitudinal, and experience sampling designs, we showed a consistent bias in people's judgment of others' psychological stress during distancing. While people expected large differences in psychological well-being between individuals with higher (vs. lower) preference for solitude (at the beginning of the pandemic: Studies 1, 2; two years into the pandemic: Study 4), the actual differences were either smaller than people's expectations (Study 2) or even non-existent after adjusting for confounders (Study 3).

6.1 | Contributions

The current studies revealed a misconception that laypeople have regarding dispositional preference for solitude in others. Growing research shows that people voluntarily engage in solitude for the many potential benefits solitude affords (e.g., Bowker et al., 2017; Long et al., 2003). Despite the potential benefits of enjoying alone time for individual well-being, our research reveals that expressing one's solitude preferences increases the risk of being misunderstood. Although solitude seekers do not necessarily experience less psychological distress in forced isolation, they are commonly perceived to be the type of people who are immune to the loss of social connections and thus

need less supportive resources compared to others in social isolation.

The current studies contribute to research on how people think about the impact of public health policies on others. Substantial research effort has been directed at examining psychological well-being and its protective factors, such as certain personality traits, during times of social distancing (e.g., Anglim & Horwood, 2021; Luchetti et al., 2020; McGinty et al., 2020; Modersitzki et al., 2020; Sibley et al., 2020; for a recent review, see Aknin et al., 2022). But relatively few studies have examined whether people can accurately understand the distress others experience. Since the start of the COVID-19 pandemic, media and the general public have assumed that people of certain personality would experience less distress or even benefit from social distancing during a pandemic. Our research tested this popular belief by focusing on dispositional preference for solitude, a trait that is intuitively highly relevant to the experience of social isolation during socially distant times. We showed that people overestimated the role of preference for solitude when judging others' subjective experience (loneliness and life satisfaction) with social distancing.

Moreover, our research adds to the literature on the role of personality in predicting psychological consequences of social isolation during a pandemic. It has been suggested that some personality traits might represent a risk factor, while others could serve as a protective factor for mental health during social distancing times. Consistent with past research (e.g., Anglim & Horwood, 2021; Modersitzki et al., 2020), we found negative emotionality (or, neuroticism) to be a risk factor (see Study 3). However, despite the common assumption that high preference for solitude could represent a protective factor rendering individuals more resilient in times of social isolation, our studies suggest that the actual role of preference for solitude is smaller than expected and even negligible after adjusting for covariates. These findings converge with past work showing that preference for solitude serves as a poor predictor of participants' ill-being at the beginning of the pandemic lockdown (Weinstein & Nguyen, 2020).

Finally, our research contributes to the literature on social perception. Our results support predictions from the literature on lay dispositionism (or, correspondence bias, fundamental attribution error; Gilbert & Malone, 1995; Ross, 1977; Ross & Nisbett, 1991). Specifically, our studies show that people over-use the information of a target person's dispositions when making predictions about the target's subjective experiences. Our findings are also consistent with and extend research on stereotype inaccuracy (Jussim et al., 2015). Existing research on stereotype inaccuracy has mostly focused on groups which are defined by socio-demographic characteristics (e.g., gender, age, and ethnicity), showing that people tend to exaggerate psychological differences between such groups (Epley & Eyal, 2019). Our research suggests that this conclusion may well extend beyond traditional groups (Stavrova et al., 2022). Similar to these traditional, well-studied groups defined using gender, age, and ethnicity, people may readily categorize others based on their psychological dispositions (e.g., he is the type of person who enjoys alone time) and develop a set of stereotypical beliefs (e.g., he never feels lonely). As a result, people may over-estimate the psychological differences between individuals who are categorized into these groups.

6.2 | Limitations and future directions

The current studies are not without limitations. First, we have only collected data from The US, The UK, and The Netherlands. The extent to which the current conclusions extend to other cultures or regions remain unclear. Second, people's experiences during times of distancing varied due to a number of factors (e.g., whether they lived in urban or rural areas, whether they lived alone or with others). These factors could be potential moderators of the link between preference for solitude and the outcome variables we examined in this research.[10]

Third, it is important to note that we investigated people's beliefs about others' experiences (e.g., loneliness) during the times of social distancing and the accuracy of their beliefs. We did not investigate people's beliefs about how others' loneliness levels have changed during distancing compared to before distancing. Nor did we examine how people's loneliness levels have changed during distancing compared to their initial pre-pandemic baselines. Therefore, the current data (e.g., Study 3) must not be interpreted as the causal effect of social distancing on loneliness, but rather people's loneliness levels during times of distancing.

Relatedly, because these studies were conducted in the context of social distancing, the current studies cannot speak to the general well-being levels in other contexts (e.g., pre-pandemic). We acknowledge the possibility that the discrepancy between lay beliefs versus people's actual experiences could be observed in pandemic-unrelated, regular daily contexts. For example, people may assume that a target person of higher (vs. lower) preference for solitude experiences lower levels of loneliness in general. But a high solitude preference target may in fact experience a similar level of loneliness as others or even a higher level of loneliness (Burger, 1995). In addition, social exclusion (e.g., not being invited to a party, being ignored in group conversations) is a common experience in everyday life.

Do target individuals with a stronger (vs. a weaker) preference for solitude experience less negative psychological outcomes in response to exclusion? Is their social pain recognized or overlooked? These are interesting questions await future research.

In addition, the current work focused on preference for solitude, which represents a person's pursuit and enjoyment of solitude, but does not explicitly specify the reasons why solitude is preferred. We encourage future research to consider "subtypes" of preference for solitude. People pursue solitude for a range of reasons. For example, some people may prefer solitude simply because they have a low motivation to be with others (e.g., having a weak belonging need); and other people may prefer solitude because they derive greater enjoyment from the quiet in solitude (e.g., to relax and center themselves). These specific reasons for solitude may guide people's experience in solitude. In particular, recent research has shown that it is important to distinguish between intrinsic versus extrinsic motivations for solitude when examining the outcomes of solitude (Nguyen et al., 2018; Thomas & Azmitia, 2019). Building on this line of work, future research should explore people's beliefs (and the accuracy of people's beliefs) about a target who has an intrinsic versus extrinsic motivation to be alone.

Future research should explore how the relationship between observers and targets shape observers' beliefs. The current research focused on perceptions of unacquainted others. It remains unclear whether or not people would still rely on target preference for solitude when the targets are close others such as friends and family. The role of target preference for solitude may diminish in evaluating close (vs. distant) others, because people are likely to have access to and use more valid information (e.g., targets' reactions to a similar situation in the past) to guide their inferences. For example, the better (longer) people know the target, the more accurate are their assessment of target well-being (Schneider et al., 2010). At the same time, even with close others, observers might have limited access to targets' inner feelings and continue to use their behavior and expressed preferences for solitary activities (which are usually more accessible to observers) to make inferences about their psychological states.

Another future direction concerns the stigma of the preference for solitude. Past work shows that preference for solitude is associated with reputational costs and negative interpersonal outcomes. For example, children are less interested in affiliating with a solitude-seeking peer compared to a social peer (Ding et al., 2015; Zava et al., 2020). Similarly, college students reported higher ostracism intentions of a solitude-seeking target (Ren & Evans, 2021). In contrast to these findings, the Prolific participants in our Study 1 rated high (vs. low) preference targets to be more likeable. We propose two possible explanations. First, adults (such as the participants from Prolific) might have developed more positive attitudes and beliefs about solitude compared to younger age groups such as children and college students, when the norm of peer interaction is stronger (Coplan, Ooi, & Baldwin, 2019). Second, it is possible that people have developed a more positive attitude toward trait preference for solitude, given that the ability to endure alone time is more valued during (vs. before) a pandemic. Future research is needed to explore both possibilities.

Finally, it is important to investigate how to overcome the barriers for better understanding of solitude-seeking individuals. One strategy worth considering is simply asking how others feel (Epley & Eyal, 2019). In one experiment, people were able to predict their relationship partners' opinions more accurately after verbally discussing the opinion statements with their partners compared to taking their partners' perspectives (Eyal et al., 2018). It would be interesting to examine whether and to what extent this strategy improves people's judgment accuracy of solitude-seeking others in the context of social distancing-related isolation and solitude more generally. In addition, researchers may also draw insights from the existing work that are designed to overcome other forms of biases (e.g., implicit racial bias; Lai et al., 2014). For example, providing participants with fictional counterstereotypical exemplars (e.g., bonding with a colleague who has a general preference for solitude in a friendly conversation) may reduce participants' stereotypical beliefs.

7 | CONCLUSION

We explored lay people's beliefs about the role of dispositional preference for solitude when judging others' psychological outcomes during the COVID-19 pandemic, and the accuracy thereof. People systematically overestimated the role of preference for solitude when predicting others' psychological experiences (e.g., loneliness, life satisfaction) during social distancing. As a result, solitude-seeking individuals may miss out on the individual or public support for coping with the psychological distress, leading to higher risk for mental health issues.

AUTHOR CONTRIBUTIONS

Dongning Ren, Olga Stavrova, and Anthony M. Evans designed Studies 1-2; Dongning Ren and Olga Stavrova designed Studies 3-4. Dongning Ren collected data for Studies 1, 2 & 4; Olga Stavrova collected data for Study 3. Dongning Ren analyzed the data in all studies. Dongning Ren drafted the article. Olga Stavrova provided critical revisions of the article. All authors reviewed and approved the final version of the article.

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CONFLICT OF INTEREST STATEMENT
None to disclose.

ETHICS APPROVAL STATEMENT
All studies were approved by the Ethics Review Board of the School of Social and Behavioral Sciences of Tilburg University.

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ENDNOTES
[1] The attention check question reads "This is an attention check question. Please simply choose 2 so that we know you are paying attention." (1 = *not at all*, 5 = *extremely*).

[2] Participants also completed one item to estimate to what extent Robin would feel bored due to the social distancing policies. See Supplementary Materials.

[3] We conducted an additional study using cross-sectional survey design that assessed the actual association between preference for solitude and loneliness. Results of this additional study support the main conclusion of the manuscript (i.e., people overestimate the role of preference for solitude). Due to several methodological shortcomings of the design, this study is reported in Supplementary Materials.

[4] The instruction for the attention check reads "Please take the time to answer these questions seriously. Here's why, we test whether you actually take the time to read the instructions. Therefore, if you read this, please answer 'three' on the first question, and 'five' on the second and third question". Below this instruction, three items were presented (e.g., "I prefer experiments where I can interact with other people." 1 = *not at all*, 9 = *very much*).

[5] We conducted a sensitivity analysis by removing participants ($n = 3$) who completed only one or two momentary assessments. Results are nearly identical. See Supplementary Materials

[6] See Supplementary Materials for a list of irrelevant variables in both modules (e.g., self-control).

[7] Although all variables were recorded at each time point, for age, gender, education, political orientation, religion, and income, Time 1 responses were analyzed.

[8] At the request of a reviewer, we also examined the longitudinal change in loneliness and life satisfaction across the three waves using growth curve models. Results suggest that, on average, there was little longitudinal change in participants' loneliness and life satisfaction across the three waves. In addition, we observed no evidence that the effect of time differed for those with high versus low preference for solitude. See Supplementary Materials for details.

[9] At the request of a reviewer, we included random slopes of social interaction in the past hour in the relevant models (Models 2–5). We obtained highly similar results. See Supplementary Materials.

[10] We explored but found inconclusive evidence that the link between preference for solitude and the outcome variables differed for those living alone versus with others. See Supplementary Materials.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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