

Thinking Through Secrets: Rethinking the Role of Thought Suppression in Secrecy

Michael L. Slepian¹ , Katharine H. Greenaway², and E. J. Masicampo³

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Abstract

Having secrets on the mind is associated with lower well-being, and a common view of secrets is that people work to suppress and avoid them—but might people actually want to think about their secrets? Four studies examining more than 11,000 real-world secrets found that the answer depends on the importance of the secret: People generally seek to engage with thoughts of *significant* secrets and seek to suppress thoughts of *trivial* secrets. Inconsistent with an ironic process account, adopting the strategy to suppress thoughts of a secret was not related to a tendency to think about the secret. Instead, adopting the strategy to engage with thoughts of a secret was related the tendency to think about the secret. Moreover, the temporal focus of one's thoughts moderated the relationship between mind-wandering to the secret and well-being, with a focus on the past exacerbating a harmful link. These results suggest that people do not universally seek to suppress their secrets; they also seek to engage with them, although not always effectively.

Keywords

secrecy, mind-wandering, concealment, thought suppression, meaning making

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Are people in control of their thoughts? For the most part, the answer seems to be obvious: Yes. On Monday morning, we may choose to fondly recall and think about our weekend, but later force ourselves to focus on a task with a deadline in the afternoon. But what about thoughts people prefer to not have? How often do people seek to suppress their thoughts?

Whereas prior work has asked whether people *can* successfully suppress thoughts (on demand in a lab setting), prior research has yet to examine the extent to which people volitionally *choose* to suppress thoughts in daily life, and how this relates to their tendency to think about that thought outside the lab. We explore this question with thoughts that people might typically seek to avoid, thoughts of secrets. Secrecy is common, and people's secrets are often negative in valence (Slepian et al., 2017; Slepian, Kirby, & Kalokerinos, 2019). Accordingly, people may think of secrets as something to be avoided—things to keep hidden from others and buried in the past.

Do people want to think about their secrets? An intuitive answer to this question is: No. Indeed, early work on secrecy suggested that secret-keepers typically seek to suppress thoughts of their secrets, such as to facilitate concealment (Lane & Wegner, 1995). Yet, a separate stream of research suggests that people are motivated to think about

matters of personal importance; it is these personal concerns that are likely to spontaneously come to mind—even when the target thought is not relevant to the context at hand (e.g., Klinger, 1987, 2013).

In the present work, we take a descriptive approach to understand whether and when people seek to engage with, or suppress, thoughts of secrets, and how such preferences relate to well-being. Prior work offers competing theories of how people seek to control thoughts of their secrets and what associations well-being has with these strategies. The present work also suggests a reconciliation of the thought suppression and engagement literatures (which are at odds with one another), while connecting each body of work to the literature on mind-wandering, the temporal focus of one's thoughts, and well-being. We discuss novel implications for secrecy and thought suppression and coping, more generally.

¹Columbia University, New York, NY, USA

²The University of Melbourne, Victoria, Australia

³Wake Forest University, Winston-Salem, NC, USA

Corresponding Author:

Michael L. Slepian, Columbia Business School, 3022 Broadway, New York, NY 10027, USA.

Email: michael.slepian@columbia.edu

Thought Suppression and Thought Engagement

Prior Models of Secrecy and Thought Suppression

The *preoccupation model of secrecy* argues that secret-keepers typically seek to suppress thoughts of their secrets (Lane & Wegner, 1995). Whereas Lane and Wegner (1995) explored thought suppression as a means to conceal secrets within social interactions, what remains unexplored is whether people also seek to suppress thoughts of their secrets outside of these social interactions.

Wegner and Lane (1995), based off Wegner's (1994) model of thought suppression, extended this reasoning to suggest that suppression of secrets generally would result in a harmful cycle, whereby attempted thought suppression promotes intrusive thoughts about the secret, which causes renewed efforts at suppression, ultimately leading to lower well-being.

Where Experiments are Not Appropriate

An experiment like those used in prior work (e.g., Lane & Wegner, 1995) that assigns a participant to conceal a secret comes with experimental control but loses the richness and importance that comes with studying people's real-world secrets. Assigning people to conceal a novel secret in the laboratory may, under certain circumstances, approximate the isolated act of concealing a secret during a social interaction (e.g., Critcher & Ferguson, 2014). Yet a secret created during a laboratory session cannot capture the broader experience of living with a personally relevant secret day in and day out. In particular, research reveals that concealment within social interactions represents only a small slice of the broader experience of secrecy (Slepian et al., 2017; Slepian, Kirby, & Kalokerinos, 2019; Slepian & Moulton-Tetlock, 2019). More often people spend time alone thinking about their secrets, outside of social interactions (McDonald et al., 2019; Slepian et al., 2017; Slepian, Kirby, & Kalokerinos, 2019; Slepian & Moulton-Tetlock, 2019).

Moreover, it is not the frequency with which people conceal their secrets that uniquely predicts how much harm they report their secrets bring, but rather how much they mind-wander to their secrets (i.e., think about them outside of concealment contexts; Slepian et al., 2017; Slepian & Moulton-Tetlock, 2019). This research suggests that asking participants to conceal something in the laboratory does not reveal a complete picture of secrecy.

By the same token, we propose that experimentally asking participants to suppress a thought suffers from a similar problem: it assumes that this is how people typically handle their secrets. In contrast, a descriptive approach can reveal what people do with their secrets in their everyday lives and how they seek to manage their thoughts around their secrets.

Models of Mind-Wandering and Thought Engagement

People spend about a third of their waking hours catching themselves thinking about something unrelated to the current external environment, that is, *mind-wandering* (Kane et al., 2007; Killingsworth & Gilbert, 2010). Prominent models of mind-wandering suggest when off-task thoughts are likely to come to mind, yet they also suggest under-explored ways in which people may seek to control thoughts of their secrets. That is, people may not only seek to suppress secrets, but rather, the more significant and important they are, the more they may seek to *engage* with them (i.e., spending time thinking them through when they come to mind).

The *current concerns model* (Klinger, 1987, 2013) proposes that attention shifts from the external environment toward internal thoughts when such thoughts have more value. When a personal concern is of high significance, thinking about it may provide more value than engaging with the external environment. This suggests that, whereas people might prefer to avoid thoughts of trivial secrets (which lack importance), people might prefer instead to engage with highly significant secrets, reflecting a basic desire to think through and understand one's experiences (Segerstrom et al., 2003; Watkins, 2008).

In addition, the decoupling model of mind-wandering (Smallwood et al., 2012) suggests that when people are sufficiently motivated to consider the target thought, they will further engage with the thought. We propose it is important to allow for the possibility that people might want to think about their secrets. Indeed, given that secrets often deal with ongoing personal concerns that require some resolution (Slepian et al., 2017), if one is not talking about it with others, then the only venue to work through it is within one's own mind.

The Current Work

The present research provides the first picture of the extent to which people seek to control thoughts about their secrets in everyday life. We created and validated a new measure of the extent to which people seek to suppress thoughts of their secrets and the extent to which people seek to engage with thoughts of their secrets. Thus, we sought to measure people's preferred strategies for thinking about secrets. In addition, as with previous work in this domain, we measure people's experiences with their secrets. Specifically, we measure the extent to which people mind-wander to thoughts of their secrets (i.e., outside of concealment contexts) and the extent to which they conceal their secrets when with other people. We test whether preferred strategies (i.e., a tendency toward suppression vs. engagement with thoughts of a given secret) are associated with these experiences with secrets (i.e., mind-wandering and concealment).

Whereas Wegner's (1994) model of thought suppression would predict suppression would result in an ironic increase in

mind-wandering to secrets, the unwanted memories literature suggests that people can suppress naturally unwanted thoughts (Hu et al., 2017). We argue that an experiment that assigns a participant to suppress a target thought on-demand without any practice in a single setting cannot discriminate between these two possibilities because such an experiment no longer studies the phenomenon of interest (non-externally imposed, volitional thought suppression as sought out naturally in daily life).

In addition to testing whether people seek to engage with or suppress thoughts of their secrets, we assessed how daily experience with secrets (mind-wandering and concealment) is associated with well-being. Prior work suggests that attempts at thought suppression are harmful for well-being (Wenzlaff & Wegner, 2000), and that thought engagement may in some cases be associated with improved well-being. Indeed, cognitive processing has been used to explain the health benefits of expressive writing (Greenberg et al., 1996; Petrie et al., 1995; Smyth, 1998). Of course, there is no guarantee that thought engagement will be beneficial for well-being. While thinking through a negative experience can potentially improve well-being (Pennebaker & Beall, 1986), this can also backfire. For example, in working through a negative event, a search for meaning can come up empty, making matters worse (Bonanno et al., 2004; Lepore & Kernan, 2009; Park, 2010). If people tend to think about their secrets in unhealthy and counterproductive ways, then seeking to process and engage with thoughts of a secret could backfire, so that the more people think about their secrets (in unhealthy ways), the lower their well-being.

Research Overview

We conducted four studies to assess how people control thoughts about secrets and how this relates to well-being. Study 1 was a daily diary study, designed to validate a new measure of seeking to engage with and suppress thoughts of secrets. Studies 2 to 4 tested whether seeking to engage with or suppress thoughts of secrets was moderated by secret significance. In all studies, we predicted that people would both seek to suppress and to engage with thoughts of their secrets. However, we further predicted, consistent with the current concerns model (Klinger, 1987, 2013), that people would seek to engage with thoughts of secrets of high significance, and instead would seek to suppress thoughts of secrets of low significance.

Studies 2 to 4 also assessed the degree to which seeking engagement and suppression are associated with the experiences of thinking about secrets outside of concealment contexts (i.e., mind-wandering to them), and concealing them within social interactions. We examined these experiences in particular, as prior work has explored how these experiences relate to well-being, and as such this may provide insight into helping people develop adaptive strategies for managing secrecy. In line with this goal, Studies 3 and 4 tested a potential moderator of the relationship between thinking about secrets and well-being: the temporal focus of one's thoughts.

Research suggests that mind-wandering is often functional when future-focused, but counterproductive when past-focused (Baird et al., 2011; Ruby, Smallwood, Engen, & Singer, 2013; Ruby, Smallwood, Sackur, & Singer, 2013; see also Smallwood & O'Connor, 2011). We thus predicted that when mind-wandering to a secret is future-focused, links to lower well-being will be relatively weak (or even reverse), and when it is past-focused, links to lower well-being will be relatively strong.

Participant Samples

The current work takes an approach akin to experience sampling. After our longitudinal validation study, in Studies 2-4, rather than asking participants to answer questions across multiple days, we ask them to report on their experiences across multiple personal secrets. Hence, we obtain repeated measurements for our participants, but across secrets rather than across time. We sought 200 participants per study. With each participant holding multiple secrets, this yields thousands of secrets per study for powerful analyses. Through bootstrapping a prior dataset with a similar structure (with 10,000 iterations), we estimated the number of participants required to detect a small relationship ($b = 0.30$ on a 1-7 scale and our measure of mind-wandering frequency, $\alpha = .05$), which yielded 70 participants required to reliably detect this relationship (each with on average 13 secrets, per Slepian et al., 2017). We collected more than double this sample size (implementing the same sample size as prior secrecy studies; Slepian et al., 2017; Slepian, Kirby, & Kalokerinos, 2019; Slepian & Moulton-Tetlock, 2019).

Participants were recruited on Mechanical Turk, giving us a more nationally representative and diverse sample than typical college samples and anonymity not possible in a physical laboratory. We report all measures, manipulations, and exclusions in all studies. In the current studies, there were no repeat participants nor any with suspicious geolocations.

Study 1: Thought Control Strategies

We were interested in volitional thought suppression and engagement as naturally sought in daily life. Accordingly, the goal of Study 1 was to develop a self-report measure of seeking to engage with and suppress thoughts of one's secret. We sought to validate our new measure by conducting a longitudinal study tracking daily self-reports of thought suppression and thought engagement.

Participants recounted how many times they sought to suppress or engage with thoughts of their secrets at the end of each day, for 5 days. We preferred this retrospective method to one in which we told participants at the start of the day to track their use of thought control strategies as the latter might artificially increase the tendency to think about the target thought. Moreover, when it comes to a salient secret, participants should be able to recall from the preceding hours

Table 1. Measures of Thought Control Strategies and Loadings on Engagement and Suppression Factors.

| Item order | Item | Seeking to engage | Seeking to suppress |
|------------|--|-------------------|---------------------|
| 1 | When this secret comes to mind: . . . I spend some time thinking about it to try to work through it. | .93 | .11 |
| 2 | When this secret comes to mind: . . . I immediately try to push it out of my thinking. | .16 | .94 |
| 3 | I feel that the only way to handle this secret is to think through it to figure it out/what to do. | .94 | .04 |
| 4 | I feel that the only way to handle this secret is to avoid thinking about it. | .04 | .96 |

Note. Response options from 1 = *not at all* to 7 = *very much*. A factor analysis demonstrated two independent factors: seeking to *suppress* thoughts of secrets and seeking to *engage* with thoughts of secrets. Items on their loading factors are in bold.

whether they sought to suppress or engage with thoughts of the secret. Thus, we introduce a simple face-valid measure of people's preferred thought control strategies and seek to validate it by testing whether this new measure predicts daily thought suppression and engagement.

Method

Participants and design. We recruited 200 participants in committed relationships (with two not submitting their code, allowing two more to take part; $N = 202$, $M_{\text{age}} = 33.10$ years, $SD = 9.30$, 98 men, 104 women) and asked them to recall a secret kept from their partner (as per Slepian et al., 2017). Participants then completed a new measure of thought control strategies sought for the secret. Finally, at the end of each day, for 5 days, participants recorded the number of times they sought to suppress, and how many times they sought to engage with, thoughts of a secret when it came to mind.

Procedure

Day 1: Tendency to seek thought suppression and engagement. First, participants recalled a secret they were keeping. When measuring experience with only a single secret, prior work recommends holding the target of the secret constant to minimize variance in the secrets recalled (Slepian et al., 2017). All participants thus recalled a secret they were keeping from their partner.

Next, participants completed a new, four-item measure of thought control strategies, with respect to the specific secret recalled. Our two predicted factors emerged: seeking engagement with the thought and seeking to suppress it (Table 1). Participants also reported the significance of their secret from 1 = *not at all* to 7 = *very much* (which tracks the importance of the secret; Slepian, Kirby, & Kalokerinos, 2019).

Exclusions and invitation to Part 2 of the study. Participants without secrets ($n = 18$), who failed the manipulation check (asking whether their partner knew the secret, $n = 10$), or failed the honesty check (asking whether they recalled a real secret, $n = 1$), were excluded. The remaining participants ($n = 173$) were invited to participate in a multi-day study,

with 147 participants accepting. To minimize attrition, we offered a monetary bonus for each day of participation.

If a participant successfully responded one day, they were invited again the next; 103, 85, 72, 65, and 60 participants completed Days 2 through 6, respectively. After missing data (i.e., participants not filling in suppression or engagement attempts; 10 data points missing)—across all follow-up days (i.e., across Days 2 through 6), we had a total sample size of 522 observations of daily thought suppression and 522 observations of daily thought engagement.

Days 2 through 6. To parallel prior work, at the end of each day (as in Slepian et al., 2017), participants reported the number of times that day they actively concealed the secret from their partner, and the number of times their secret spontaneously came to mind when not with their partner (i.e., mind-wandering frequency).

When a secret comes to mind, a person may attempt to suppress that thought, or a person may engage with that thought. Accordingly, participants indicated, when a secret came to mind that day, how many times “did you try to push it out of your thinking and not think about it?” (thought suppression), and how many times “did you want to think through it, and think about it?” (thought engagement).

Results

Hypotheses. We predicted that Day 1 reports of seeking to suppress thoughts of one's secret when they come to mind would predict daily instances of thought suppression (Days 2–6). We also predicted that Day 1 reports of seeking to engage with thoughts of one's secret when they come to mind would predict daily instances of thought engagement. Study 1 thus sought to validate the (Day 1) reports of seeking to suppress and engage with thoughts of secrets for use in the later studies.

Analysis plan. In the first part of the study, participants reported to what extent they seek to suppress thoughts of their specific secret ($M = 3.84$, $SD = 2.09$, 95% confidence interval [CI] = [3.37, 3.91]), and to what extent they seek to

Table 2. Predicting Daily Suppression of Secrets in Study 1.

| Predicting daily suppression (Days 2–6) $M = 1.54 (2.22)$, 95% CI = [1.35, 1.73] | <i>b</i> | 95% CI | SE | <i>df</i> | <i>t</i> | <i>p</i> value |
|--|----------|---------------|------|-----------|----------|----------------|
| Seeking to suppress (Day 1) | 0.31 | [0.18, 0.43] | 0.06 | 122.25 | 4.77 | <.001 |
| Seeking to engage (Day 1) | 0.08 | [-0.06, 0.22] | 0.07 | 118.74 | 1.13 | .26 |
| Day of study (2–6) | 0.09 | [0.002, 0.17] | 0.04 | 467.58 | 2.00 | .05 |
| Daily engagement (Days 2–6) | 0.38 | [0.30, 0.45] | 0.04 | 415.79 | 9.80 | <.001 |
| Significance (Day 1) | -0.04 | [-0.18, 0.10] | 0.07 | 119.79 | -0.62 | .54 |

Note. CI = confidence interval.

Table 3. Predicting Daily Engagement with Secrets in Study 1.

| Predicting daily engagement (Days 2–6) $M = 1.29 (2.49)$, 95% CI = [1.08, 1.50] | <i>b</i> | 95% CI | SE | <i>df</i> | <i>t</i> | <i>p</i> value |
|---|----------|----------------|------|-----------|----------|----------------|
| Seeking to suppress (Day 1) | -0.42 | [-0.61, -0.24] | 0.09 | 113.16 | -4.58 | <.001 |
| Seeking to engage (Day 1) | 0.34 | [0.13, 0.54] | 0.10 | 110.05 | 3.24 | .002 |
| Day of study (2–6) | -0.01 | [-0.09, 0.07] | 0.04 | 394.02 | -0.32 | .75 |
| Daily suppression (Days 2–6) | 0.32 | [0.24, 0.40] | 0.04 | 482.84 | 7.96 | <.001 |
| Significance (Day 1) | 0.32 | [0.12, 0.52] | 0.10 | 111.06 | 3.09 | .003 |

Note. CI = confidence interval.

engage with thoughts of their specific secret ($M = 3.64$, $SD = 1.92$, 95% CI = [3.55, 4.13]). This was our new measure that we sought to validate with Days 2 to 6 data.

Across Days 2 to 6, participants reported at the end of the day how many times they implemented each thought control strategy. Our analysis thus examined whether self-reports of seeking these thought control strategies predicted daily instances of these thought control strategies.

We entered participants' Day 1 reports of seeking thought suppression and engagement as predictors of daily instances of actual thought suppression and engagement (while including day, significance of the secret, and the alternate thought control strategy as predictors to isolate each unique relationship, thus parsing out shared variance that might track a general tendency toward thought control; Table 2).

Given that we had multiple observations per participant, we used R-packages lme4 and lmerTest to conduct cross-classified multilevel models (which were run through Satterthwaite approximation tests to calculate *p* values; in approximating the *F* distribution, estimated *df* are fractional and differ by predictor; Kuznetsova et al., 2013). This approach is used for all multilevel model analyses.

Predicting daily suppression (Days 2–6). In Table 2, we enter all variables as simultaneous predictors of daily suppression (measured at the end of every day for 5 days). Daily engagement (also measured every day) positively predicted daily suppression.

Pertinent to our central hypothesis, participants' self-reported preference for seeking to suppress thoughts of a secret when it comes to mind indeed predicts daily instances of thought suppression (as reported across Days 2–6; Table 2).

Predicting daily engagement (Days 2–6). In Table 3, we enter all variables as simultaneous predictors of daily engagement (measured at the end of every day for 5 days). As would be expected from the prior analysis, daily suppression positively predicted daily engagement. The significance of the secret (reported on Day 1) also predicted daily engagement with thoughts of the secret (Days 2–6).

Pertinent to our central hypothesis, participants' self-reported preference for seeking to engage with thoughts of a secret when it comes to mind indeed predicts daily instances of thought engagement (as reported across Days 2–6; Table 3).

In a further dissociation, participants' preference (reported on Day 1) for seeking to suppress thoughts of a secret when it comes to mind predicted reduced daily instances of thought engagement (as reported across Days 2–6; Table 3).

Discussion

Several new insights emerge from Study 1. First, for the daily measures of thought suppression and engagement (Days 2–6), the more participants reported using one thought control strategy, the more they reported using the other. Intuition could have predicted an inverse relationship (on a daily basis, the more we choose to engage, the less we seek to suppress). Instead, with secrets, and when observing them in daily life, it appears that these strategies go hand-in-hand.

Also of interest, the significance of the secret (reported on Day 1 of the study before the longitudinal component) did not predict daily suppression (Days 2–6), but did positively predict daily engagement (Days 2–6). That is, the more significant the secret, the more participants on a daily basis reported engaging with thoughts of it, rather than

suppressing. In other words, when it comes to more important secrets, these seem to be things people spend time thinking about, rather than suppressing.

Finally, and most pertinently in moving forward with our investigation, participants' self-reports of seeking thought suppression and engagement with a specific secret predict daily instances of thought suppression and engagement, thus validating the new self-report measure used in the remainder of the paper.

Study 2: Thought Control Strategies, Mind-Wandering, and Well-Being

Study 1 established that people seek to engage with as well as suppress thoughts of secrets in daily life. In Study 2, we had several aims. First, we sought to collect a larger data set with more comprehensive coverage of the kinds of things people keep secret. With a wide range of secrets collected in Study 2 and multiple secrets collected per each participant, we tested whether the significance of a given secret moderated thought control strategies sought out for that secret. Given that people are motivated to make sense of significant experiences, we predicted that people would be particularly motivated to engage with thoughts of secrets that are high in significance.

Second, we examined how thought control strategies related to two everyday experiences with secrets: mind-wandering to the secret and actively concealing it. We predicted that seeking thought *engagement* would predict increased thinking about the secret when not relevant to the context at hand (i.e., mind-wandering toward secrets). This is a straightforward prediction of the current concerns model of mind-wandering (e.g., Klinger, 1987, 2013), but to our knowledge has yet to be formally tested. That is, our question here is what predicts how often a secret spontaneously comes to mind outside of concealment contexts. We predicted that the more people sought to engage with thoughts of their secrets, the more secrets would come to mind.

We did not predict that seeking thought suppression would predict increased mind-wandering toward secrets. While people have difficulty suppressing novel target thoughts (e.g., a white bear; Wegner et al., 1987), they seem quite able to suppress naturally unwanted thoughts (Anderson et al., 2004; Behar et al., 2005; Hu et al., 2017; Janeck & Calamari, 1999; Kelly & Kahn, 1994; Kingsep & Page, 2010; Luciano et al., 2007; Mathews & Milroy, 1994; Purdon & Clark, 2001; Roemer & Borkovec, 1994; Slepian et al., 2014).

Third, we examined whether well-being was associated with two broad experiences with secrets. Prior work finds that mind-wandering to and concealing secrets covary, and to understand well-being, it is important to examine both simultaneously (McDonald et al., 2019; Slepian et al., 2017; Slepian, Kirby, & Kalokerinos, 2019; Slepian & Moulton-Tetlock, 2019). As in prior work, we therefore controlled for concealment when assessing the relationship between

mind-wandering and well-being, and vice versa. Also as in prior work, we predicted only mind-wandering to (not concealment of) a secret would predict a negative well-being impact of the secret.

Method

Participants and design. We recruited 200 participants ($M_{\text{age}} = 34.54$, $SD = 10.95$, 81 men, 119 women). Participants completed the Common Secrets Questionnaire, which presents 38 common categories of secrets (see Slepian et al., 2017 for full item wordings). This method allows collecting data on multiple secrets per participant. In this study, and the studies that follow, we take our measures per each secret that participants have (of the 38 categories) and analyze the data via multilevel modeling. Figure 1 visualizes each secret kept by our Studies 2 to 4 participants.

Participants indicated for each secret, the extent to which they seek out suppression and engagement (using the measure from Study 1). Participants then indicated how frequently they *concealed* and *mind-wandered* to the secret. People do not think about secrets every day (Slepian et al., 2017; Slepian, Kirby, & Kalokerinos, 2019; Slepian & Moulton-Tetlock, 2019). Thus, it is important to implement a wide window for estimations of prior mind-wandering and concealment episodes. As in prior work, we used a month-long window (Slepian et al., 2017; Slepian, Kirby, & Kalokerinos, 2019; Slepian & Moulton-Tetlock, 2019). Participants also reported the significance of the secret. Finally, participants indicated how much each secret affected their *well-being*, a measure that has been shown to relate to a variety of global well-being measures, including life satisfaction and physical health (see Slepian et al., 2017; Slepian & Moulton-Tetlock, 2019).

Procedure

Seeking suppression and engagement. Per each secret, participants reported to what extent they seek out suppression and engagement (using the same scale introduced in Study 1; i.e., the scale completed on Day 1 of Study 1).

Mind-wandering and concealment. Next, participants estimated how many times in the past month they mind-wandered to the secret (i.e., spontaneously thought about the secret when not with someone from whom the secret is being kept; Slepian et al., 2017; Slepian, Kirby, & Kalokerinos, 2019; Slepian & Moulton-Tetlock, 2019). These episodes classify as mind-wandering as they capture instances of spontaneously thinking about a target thought when not relevant to the current context (see Seli et al., 2018). We specifically capture the frequency of thinking about secrets outside of concealment contexts to clearly dissociate from concealment episodes. Participants also estimated how many times they concealed the secret in the past month. While such estimates will be imprecise, internal validity should be preserved as

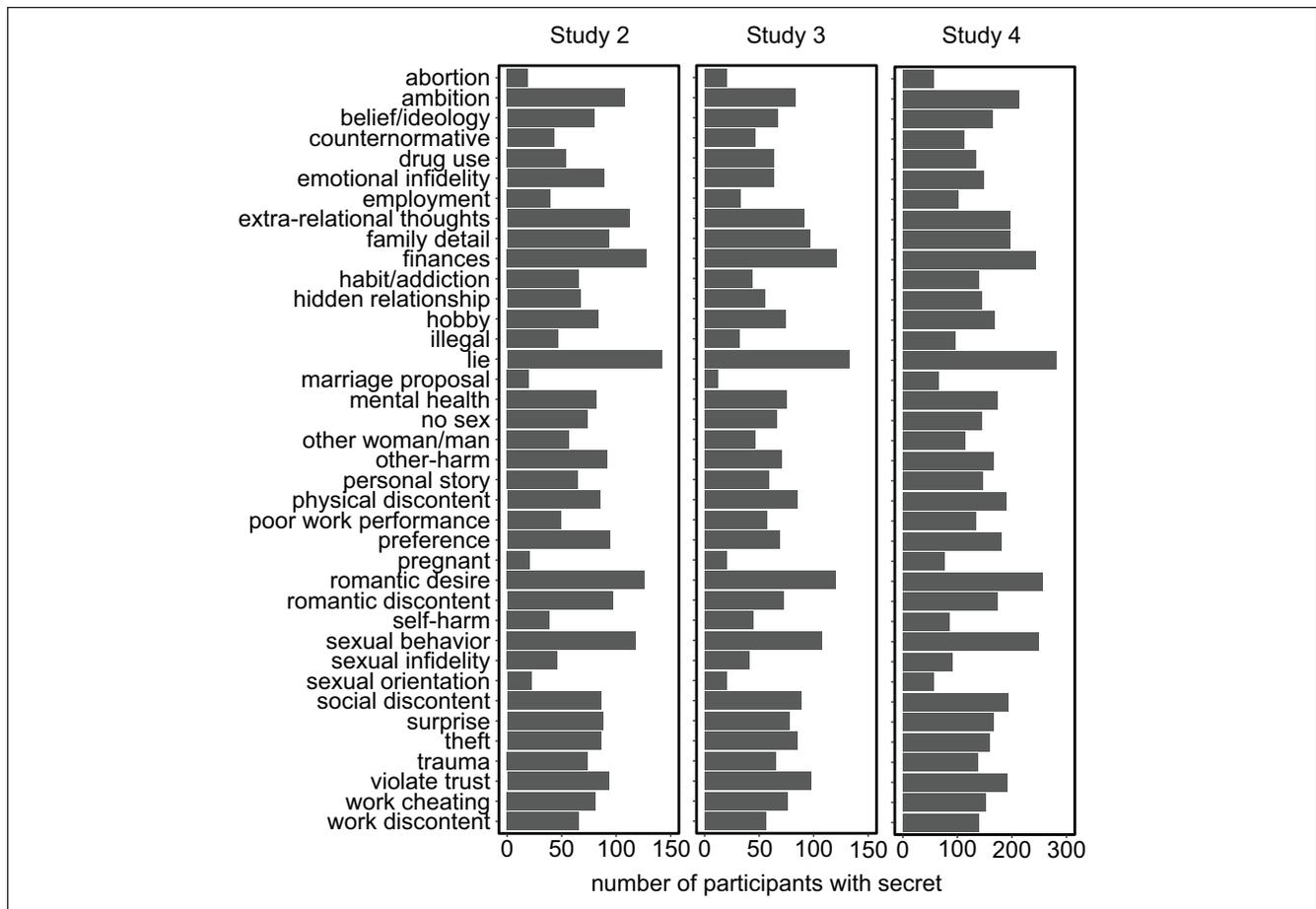


Figure 1. Number of participants with each secret, Studies 2-4.

long as the relative rankings reflect the true rankings across one's secrets (see Slepian et al., 2017; Slepian & Moulton-Tetlock, 2019).

Well-being. Finally, participants completed a well-being measure, per each secret. Accordingly, the measure was tied to the secret, and thus was a global index of the secret's influence on one's well-being, captured with one item per secret. Single-item well-being measures have been shown to have high test-retest reliability and validity, often outperforming longer measures (see Diener et al., 2018). Across Studies 2-4, we obtained 11,247 observations of this measure and validated it in the current work. As in prior work (Slepian et al., 2017; Slepian & Moulton-Tetlock, 2019), we find this measure of well-being predicts global life satisfaction (see the appendix).

Finally, we included an honesty check. Participants admitting dishonesty ($n = 3$) were excluded. See Table 4 for item wordings.

Results

Participants reported on 2,837 secrets in total.

Analysis plan. We used a multilevel modeling approach, as per Study 1. We tested our fixed effect of interest with participant and category of secret as crossed random factors. Consequently, the remaining variance explained in the model corresponds to the general relationships of, for example, thought control strategies and mind-wandering to secrets that are not specific to any particular participant or secret type (see Judd et al., 2012). To isolate the use of each thought control strategy, we entered the alternate thought control strategy when conducting analyses on each.

Outliers. For unbounded measures of frequencies of mind-wandering and concealment, the adjusted boxplot method (Hubert & Vandervieren, 2008) identified outlying responses that we excluded (as per prior work, Slepian et al., 2017). Across the two unbounded responses per secret (mind-wandering and concealment), 56 outlying responses were identified (0.10% of the data) from 22 participants who mind-wandered to or concealed secrets more than 50 times in a month.

Secret significance and thought control strategies

Hypothesis. We predicted that the secrets' rated significance would moderate preferences for thought control.

Table 4. Measures of Experience with Secrecy and Impact of Secrecy on Well-Being, Study 2.

How significant is this secret? from 1 = *not at all* to 7 = *very much*

Frequency of mind-wandering to a secret

Think about the PAST MONTH, and all the times when you were NOT with the person you are hiding this secret from, BUT found yourself spontaneously thinking about your secret . . .

How many times in the past 30 days, did you find yourself thinking about your secret?

Take your best guess and ONLY enter a NUMBER.

Frequency of concealing a secret

Think about the PAST MONTH, and all the times when you WERE WITH the person you are hiding this secret from . . .

How many times in the past 30 days did you have to prevent yourself from revealing the secret (i.e., had to hold back the secret, and not reveal it) while interacting with this person?

Take your best guess and ONLY enter a NUMBER.

Impact of secret on well-being

In general, this secret . . .

| | | |
|---------------------------------------|---|--|
| has made my life and well-being worse | has had no effect on my life and well-being | has made my life and well-being better |
| -6 -5 -4 -3 -2 | -1 0 1 2 3 4 5 | 6 |

And two more items in Studies 3 and 4.

Having this secret . . .

| | | |
|--------------------------------|--|------------------------------|
| makes me unsatisfied with life | has had no effect on my satisfaction with life | makes me satisfied with life |
| -6 -5 -4 -3 -2 | -1 0 1 2 3 4 5 | 6 |

Having this secret . . .

| | | |
|------------------------|-----------------------------------|----------------|
| makes me unhappy | has had no effect on my happiness | makes me happy |
| -6 -5 -4 -3 -2 | -1 0 1 2 3 4 5 | 6 |

Note. These measures were drawn from and validated in the work by Slepian et al. (2017). They were also additionally validated in the present work (see the appendix).

Analysis. Predicting seeking to engage in thought control, we conducted a multilevel model that entered thought control strategy-type (suppress = 0, engage = 1) and significance of the secret (with participant and category of secret as random factors), followed by their interaction (Table 5).

Table 5 reveals that the more significant the secret, the more participants sought to control their thoughts (independent of strategy-type). And independent of the significance of the secret, participants did not seek suppression and engagement to different extents.

This was qualified by an interaction. Simple slope analyses examined the relationships at high (+1 *SD*) and low (−1 *SD*) significance of the secret (Table 5). Participants sought to suppress more than engage with thoughts of *low* significance secrets, and in contrast, sought to engage with more than suppress thoughts of *high* significance secrets.

Thus, people reported preferring to suppress trivial secrets, but to engage with thoughts of significant secrets. Or stated differently, the secrets that people report as trivial are the ones they seek to suppress and the secrets they report as significant are the ones they seek to engage with.

Thought control strategies and mind-wandering to secrets

Hypothesis. We hypothesized that seeking thought engagement (but not suppression) would predict an increased frequency of mind-wandering to secrets.

Analysis. As in prior work (Slepian et al., 2017; Slepian, Kirby, & Kalokerinos, 2019; Slepian & Moulton-Tetlock, 2019), we distinguish between concealing a secret within a social interaction and mind-wandering to a secret outside of those interactions (as they covary).

First, predicting the frequency of mind-wandering to the secret, we conducted a multilevel model that entered each thought control strategy, the significance of the secret, and concealment (with participant and category of secret as random factors).

As can be seen in Table 6, the significance of the secret and seeking to engage with thoughts of the secret predicted increased mind-wandering to the secret, whereas seeking to suppress thoughts of a secret did not predict mind-wandering to the secret.

Second, for comparison, we conducted a parallel analysis on concealment. As can be seen in Table 6, it is the secrets people more engage with (not suppress), that they indicate they need to conceal more during social interactions.

Mind-wandering to secrets and well-being

Hypothesis. We hypothesized that consistent with prior work (Slepian et al., 2017; Slepian & Moulton-Tetlock, 2019), only the frequency of mind-wandering to the secret (not active concealment) would reliably predict lower well-being.

Table 5. Main Effects and Interaction between Thought Control Strategies and Secret Significance, Study 2.

| | <i>b</i> | 95% CI | SE | <i>df</i> | <i>t</i> | <i>p</i> value |
|-------------------------------|----------|----------------|-----|-----------|----------|----------------|
| Main effects | | | | | | |
| Engage (1) vs. suppress (0) | 0.07 | [-0.02, 0.16] | .04 | 5,403.26 | 1.57 | .12 |
| Significance | 0.41 | [0.38, 0.43] | .01 | 3,611.08 | 30.66 | <.001 |
| Interaction term | 0.25 | [0.21, 0.29] | .02 | 5,401.81 | 11.27 | <.001 |
| Assessed at low significance | | | | | | |
| Engage (1) vs. suppress (0) | -0.42 | [-0.54, -0.30] | .06 | 5,401.82 | -6.84 | <.001 |
| Assessed at high significance | | | | | | |
| Engage (1) vs. suppress (0) | 0.56 | [0.44, 0.68] | .06 | 5,401.82 | 9.10 | <.001 |

Note. CI = confidence interval.

Table 6. Predicting Mind-Wandering to Secrets ($M = 5.23$, $SD = 8.43$, 95% CI = [4.92, 5.55]) and Concealment of Secrets ($M = 3.08$, $SD = 6.95$, 95% CI = [2.82, 3.34]) from Use of Thought Control Strategies and Secret Significance, Study 2.

| | <i>b</i> | 95% CI | SE | <i>df</i> | <i>t</i> | <i>p</i> value |
|---------------------------|----------|---------------|------|-----------|----------|----------------|
| Predicting mind-wandering | | | | | | |
| Engage | 0.47 | [0.32, 0.62] | 0.08 | 2,715.88 | 6.22 | <.001 |
| Suppress | -0.02 | [-0.15, 0.11] | 0.07 | 2,648.47 | -0.24 | .81 |
| Significance | 0.60 | [0.45, 0.76] | 0.08 | 2,735.42 | 7.64 | <.001 |
| Concealment | 0.68 | [0.64, 0.72] | 0.02 | 2,747.94 | 34.32 | <.001 |
| Predicting concealment | | | | | | |
| Engage | 0.23 | [0.11, 0.35] | 0.06 | 2,538.78 | 3.78 | <.001 |
| Suppress | 0.06 | [-0.04, 0.17] | 0.05 | 2,253.26 | 1.15 | .25 |
| Significance | 0.24 | [0.11, 0.36] | 0.06 | 2,300.36 | 3.73 | <.001 |
| Mind-wandering | 0.44 | [0.42, 0.47] | 0.01 | 2,400.34 | 34.73 | <.001 |

Note. CI = confidence interval.

Analysis. Predicting the impact of the secret on well-being, we conducted a multilevel model that entered each variable as a simultaneous predictor of well-being (with participant and category of secret as random factors).

As can be seen in Table 7, independent of how much people mind-wander to their secrets and conceal their secrets, seeking to suppress thoughts of secrets was linked to lower well-being. Yet, it does not appear that this is a function of increased mind-wandering to the secret, as seeking suppression did not predict mind-wandering (Table 6). As with other work, it was mind-wandering to secrets, not concealment of them, that predicted lower well-being (Slepian et al., 2017; Slepian, Kirby, & Kalokerinos, 2019). As noted earlier, this measure of well-being has been previously validated as corresponding with general life satisfaction, and we replicated that validation in the present work (see the appendix).

Discussion

Study 2 reveals several novel insights into the experience of secrecy. First, it was more trivial secrets that people sought to suppress, whereas it was more significant secrets people sought to engage with.

Second, it was the preference to engage with thoughts of a secret that predicted how often the secret was mind-wandered to (outside of concealment settings), and not the preference for suppression. This latter finding is notable in the context of the finding that the more participants report mind-wandering to the secret, the more they report the secret hurts their well-being (e.g., Slepian et al., 2017).

Lane and Wegner (1995) suggested that people use thought suppression as a strategy for concealment (i.e., one way to conceal a secret when talking to someone is to not think about that secret oneself). Rather than examine thought suppression as a way to keep a secret, our focal interest was in whether people use thought suppression as a way to deal with thoughts of a secret that occur outside of concealment settings. Our results suggest that at least when it comes to how people deal with secrets outside of social interactions, it is engagement they seek for significant secrets, not suppression.

An alternative interpretation of these correlational results is that when people seek to suppress a secret, this makes it seem trivial (rather than more significant). Or relatedly, a secret does not feel very significant if it is suppressed. Even these alternative interpretations, however, serve as a counterpoint to the classic story of how thought suppression fuels psychopathology, which emphasizes that suppression only

Table 7. Predicting Well-Being from Use of Thought Control Strategies, Mind-Wandering, Concealment, and Secret Significance, Study 2.

| | <i>b</i> | 95% CI | SE | <i>df</i> | <i>t</i> | <i>p</i> value |
|----------------|----------|----------------|------|-----------|----------|----------------|
| Mind-wandering | -0.02 | [-0.03, -0.01] | 0.01 | 2,742.86 | -2.73 | .006 |
| Concealment | -0.01 | [-0.03, 0.004] | 0.01 | 2,733.67 | -1.54 | .12 |
| Engage | -0.01 | [-0.07, 0.04] | 0.03 | 2,718.76 | -0.49 | .62 |
| Suppress | -0.12 | [-0.17, -0.07] | 0.02 | 2,682.66 | -5.12 | <.001 |
| Significance | -0.18 | [-0.24, -0.13] | 0.03 | 2,753.79 | -6.53 | <.001 |

Note. CI = confidence interval.

increases distress and the perceived significance of the target thought (see Wenzlaff & Wegner, 2000). Importantly, we do not mean to suggest thought suppression is not harmful. Independent of its success or failure, seeking to suppress thoughts should correlate with other unhealthy coping mechanisms (e.g., avoiding one's problems; see Larson et al., 2015). That said, outside of concealment settings, in much of everyday life, suppression may be linked to relatively trivial secrets, whereas more significant secrets are linked to a desire to process and engage. Moreover, mind-wandering to secrets more so than concealment of secrets may be linked to lower well-being.

Studies 3 and 4: Temporal Focus of Thoughts About Secrets

Studies 3 and 4 served as opportunities to replicate the main findings from Study 2. Specifically, they provided additional tests of the hypotheses that (a) seeking to engage with versus suppress thoughts of secrets is moderated by the significance of the secret, (b) thought control strategies (i.e., seeking engagement rather than suppression) are linked to the frequency of mind-wandering to secrets, and (c) mind-wandering to secrets, rather than concealment of them, is linked to lower well-being.

These studies also addressed a novel question: If the purpose of engaging with thoughts of one's secret is to work through and cope with the secret, why does an increased tendency to think about secrets predict lower well-being? We propose that the temporal focus of one's mind-wandering is related to the well-being outcomes of secrecy.

Mind-wandering when future-focused is often functional, yet counterproductive when past-focused. When mind-wandering concerns the future, this often fosters planning for one's goals (Baird et al., 2011; Ruby, Smallwood, Sackur, & Singer, 2013). When mind-wandering concerns the past, a negative mood is more likely (Ruby, Smallwood, Engen, & Singer, 2013; see also Smallwood & O'Connor, 2011). We thus predicted that when mind-wandering to a secret is past-focused, this would be associated with harm to well-being, whereas when future-focused, links to lower well-being will be mitigated or even reversed. Studies 3 and 4 tested this hypothesis.

Method

Studies 3 and 4 replicated the procedure of Study 2 with three changes. First, participants recalled mind-wandering and concealment episodes from only the past week instead of the past month. Second, participants reported the temporal focus of their mind-wandering episodes. And third, we measured the well-being impact of each secret with an expanded scale.

Participants and design. In Study 3, we recruited 200 participants (with two not submitting their code, allowing two more to participate; $N = 202$, $M_{\text{age}} = 36.39$ years, $SD = 13.09$, 68 men, 134 women). To examine the reliability of the Study 3 results, Study 4 doubled its sample size (one participant did not submit their code, allowing an additional participant to take part, although two other participants put in incorrect codes, not actually taking the study, yielding $N = 399$, $M_{\text{age}} = 33.91$ years, $SD = 10.79$, 185 men, 213 women, one other). Study 4 was an exact replication of Study 3, with a change to one item (in the new temporal focus scale; Table 8).

As in Study 2, participants completed the Common Secrets Questionnaire, and per each current secret reported (of the 38 categories), they completed the measure of seeking to suppress and engage with thoughts of the secret; how frequently they *concealed* and *mind-wandered* to the secret in the past week (thus replacing 30 days with 7 and "month" with "week"; cf. Table 4); and the extent to which the secret affected their *well-being* with an expanded scale (see Table 4 presented earlier).

In addition, participants reported the temporal focus of their mind-wandering, indicating the extent to which they focused on the past and future. The two temporal factors emerged in a factor analysis (Table 8). An honesty check was also included. Participants admitting dishonesty (Study 3 $n = 7$; Study 4 $n = 10$) were excluded.

Results

Study 3 participants reported on 2,541 secrets, and Study 4 participants (with double the sample size) reported on 5,869 secrets.

Outliers. Again, the adjusted boxplot method (Hubert & Vandervieren, 2008) identified outliers for unbounded measures of frequencies of mind-wandering and concealment for

Table 8. Measures of Temporal Focus, Studies 3 and 4.

| Item order | Item | Past S3 (S4) | Future S3 (S4) |
|------------|--|------------------|------------------|
| 1 | When I think about this secret: ... I think about how it affected me in the past. | .89 (.88) | .29 (.33) |
| 2 | When I think about this secret: ... I think about how it will affect me in the future. (Study 3) ... I think about how it will affect me in near the future. (Study 4) | .28 (.32) | .92 (.89) |
| 3 | When I think about this secret: ... I think about what I could have done differently in the past. | .86 (.84) | .36 (.41) |
| 4 | When I think about this secret: ... I think about what I will do in the future. | .33 (.36) | .90 (.87) |

Note. Response options from 1 = *not at all* to 7 = *very much*. A factor analysis demonstrated two independent factors: past temporal focus and future temporal focus. Items on their loading factors are in bold.

exclusion. We report Study 3 exclusions outside of brackets [and Study 4 exclusions in brackets].

Across the two unbounded responses per secret (mind-wandering and concealment), 13 [70] outlying responses were identified (0.26% [0.60%] of the data) from 6 [8] participants who indicated mind-wandering to or concealing secrets more than 62 [93] times in a week. We follow the same analysis plan of Study 2 and subsequently examine temporal focus as a moderator of mind-wandering and well-being.

Secret significance and thought control strategies

Hypothesis. As in Study 2, we predicted that participants would report preferring to suppress trivial secrets, but report preferring to engage with thoughts of significant secrets.

Analysis. As in Study 2, we examined the extent to which participants sought to engage in thought control as our dependent measure, and we conducted a multilevel model that entered thought control strategy-type (suppress = 0, engage = 1) and significance of the secret (with participant and category of secret as random factors), followed by their interaction (Table 9).

In both studies (Table 9), the more significant the secret, the more participants sought to control their thoughts (independent of strategy-type). And independent of the significance of the secret, participants did not seek suppression and engagement to different extents.

This was qualified by an interaction (Table 9). As in Study 2, in both studies, participants sought to suppress more than engage with thoughts of *low* significance secrets, and they sought to engage with more than suppress thoughts of *high* significance secrets.

Thought control strategies and mind-wandering to secrets

Hypothesis. We hypothesized that as in Study 2, seeking thought engagement (but not suppression) would predict an increased frequency of mind-wandering to secrets.

Analysis. As in Study 2, predicting the frequency of mind-wandering to the secret, we conducted a multilevel model

that entered each thought control strategy, the significance of the secret, and concealment (with participant and category of secret as random factors). Also as in Study 2, for comparison, we conducted a parallel analysis on concealment.

Replicating Study 2, in both studies, the significance of the secret and seeking to engage with thoughts of the secret predicted increased mind-wandering to the secret. Also as in Study 2, in both studies, seeking to suppress thoughts of a secret did *not* predict mind-wandering to the secret.

In Study 3 (as in Study 2), seeking engagement was positively associated with frequency of concealing the secret (Table 10). Perhaps both thought engagement and concealment track the relevance of the secret to everyday conversations, heightening both one's desire to think through the secret and one's need to conceal it (Study 4 had a similar but non-significant relationship).

Mind-wandering to secrets and well-being

Hypothesis. We hypothesized that consistent with prior work and Study 2, only the frequency of mind-wandering to the secret (not active concealment) would reliably predict lower well-being.

Analysis. Predicting the impact of the secret on well-being, we conducted a multilevel model that entered each variable as a simultaneous predictor of well-being (with participant and category of secret as random factors).

As in Study 2 (and prior work; Slepian et al., 2017; Slepian & Moulton-Tetlock, 2019), in Study 3, mind-wandering to the secret was directionally related to lower well-being, although not significantly (Table 11). In Study 4 (which had double the sample size), the typical finding of the frequency of mind-wandering to the secret predicting lower well-being emerged.

In neither study did concealment independently predict lower well-being (consistent with prior work; Slepian et al., 2017; Slepian & Moulton-Tetlock, 2019). In Study 4, increased concealment was associated with *higher* well-being. Whereas this association with concealment was not found in Studies 2 and 3, it is consistent with past theorizing:

Table 9. Main Effects and Interaction between Thought Control Strategies and Secret Significance, Studies 3 and 4.

| | <i>b</i> | 95% CI | <i>SE</i> | <i>df</i> | <i>t</i> | <i>p</i> value |
|-------------------------------|----------|----------------|-----------|-----------|----------|----------------|
| Study 3 | | | | | | |
| Main effects | | | | | | |
| Engage (1) vs. suppress (0) | 0.02 | [-0.06, 0.11] | .04 | 4,848.96 | 0.54 | .59 |
| Significance | 0.47 | [0.44, 0.49] | .01 | 4,066.57 | 35.75 | <.001 |
| Interaction term | 0.09 | [0.05, 0.13] | .02 | 4,847.89 | 4.21 | <.001 |
| Assessed at low significance | | | | | | |
| Engage (1) vs. suppress (0) | -0.16 | [-0.28, -0.04] | .06 | 4,847.89 | -2.59 | .01 |
| Assessed at high significance | | | | | | |
| Engage (1) vs. suppress (0) | 0.21 | [0.09, 0.32] | .06 | 4,847.89 | 3.35 | <.001 |
| Study 4 | | | | | | |
| Main effects | | | | | | |
| Engage (1) vs. suppress (0) | 0.05 | [-0.01, 0.10] | .03 | 11,292.80 | 1.73 | .08 |
| Significance | 0.43 | [0.42, 0.45] | .01 | 9,855.73 | 49.95 | <.001 |
| Interaction term | 0.08 | [0.06, 0.11] | .01 | 11,291.83 | 6.66 | <.001 |
| Assessed at low significance | | | | | | |
| Engage (1) vs. suppress (0) | -0.13 | [-0.21, -0.06] | .04 | 11,291.83 | 3.48 | .001 |
| Assessed at high significance | | | | | | |
| Engage (1) vs. suppress (0) | 0.22 | [0.15, 0.30] | .04 | 11,291.83 | 5.93 | <.001 |

Note. CI = confidence interval.

Table 10. Predicting Mind-Wandering to and Concealment of Secrets from Use of Thought Control Strategies and Secret Significance, Studies 3 and 4.

| | <i>b</i> | 95% CI | <i>SE</i> | <i>df</i> | <i>t</i> | <i>p</i> value |
|---------------------------|----------|----------------|-----------|-----------|----------|----------------|
| Study 3 | | | | | | |
| Predicting mind-wandering | | | | | | |
| Engage | 0.12 | [0.03, 0.21] | 0.05 | 2,386.17 | 2.61 | .009 |
| Suppress | 0.03 | [-0.05, 0.11] | 0.04 | 2,407.16 | 0.66 | .51 |
| Significance | 0.40 | [0.31, 0.50] | 0.05 | 2,382.77 | 8.26 | <.001 |
| Concealment | 0.82 | [0.76, 0.88] | 0.03 | 2,512.55 | 27.27 | <.001 |
| Predicting concealment | | | | | | |
| Engage | 0.08 | [0.03, 0.14] | 0.03 | 2,204.27 | 3.07 | .002 |
| Suppress | -0.04 | [-0.08, 0.01] | 0.02 | 2,123.51 | -1.52 | .13 |
| Significance | 0.08 | [0.02, 0.14] | 0.03 | 1,898.56 | 2.85 | .004 |
| Mind-wandering | 0.28 | [0.26, 0.30] | 0.01 | 2,339.91 | 27.66 | <.001 |
| Study 4 | | | | | | |
| Predicting mind-wandering | | | | | | |
| Engage | 0.23 | [0.15, 0.30] | 0.04 | 5,119.99 | 5.86 | <.001 |
| Suppress | -0.05 | [-0.12, 0.01] | 0.03 | 4,766.39 | -1.53 | .13 |
| Significance | 0.35 | [0.27, 0.43] | 0.04 | 5,129.49 | 8.63 | <.001 |
| Concealment | 0.62 | [0.59, 0.65] | 0.02 | 3,279.68 | 40.22 | <.001 |
| Predicting Concealment | | | | | | |
| Engage | 0.05 | [-0.003, 0.11] | 0.03 | 5,674.02 | 1.84 | .07 |
| Suppress | 0.01 | [-0.04, 0.06] | 0.03 | 5,278.38 | 0.33 | .74 |
| Significance | 0.12 | [0.06, 0.18] | 0.03 | 5,582.67 | 4.19 | <.001 |
| Mind-wandering | 0.30 | [0.28, 0.31] | 0.01 | 5,742.17 | 34.02 | <.001 |

Note. CI = confidence interval.

Table 11. Predicting Well-Being from Use of Thought Control Strategies, Mind-Wandering, Concealment, and Secret Significance, Study 3 and 4.

| | <i>b</i> | 95% CI | SE | <i>df</i> | <i>t</i> | <i>p</i> value |
|----------------|----------|----------------|------|-----------|----------|----------------|
| Study 3 | | | | | | |
| Mind-wandering | -0.01 | [-0.04, 0.01] | 0.01 | 2,461.33 | -1.45 | .15 |
| Concealment | 0.01 | [-0.02, 0.05] | 0.02 | 2,469.36 | 0.69 | .49 |
| Engage | -0.08 | [-0.13, -0.03] | 0.02 | 2,498.38 | -3.26 | .001 |
| Suppress | -0.16 | [-0.20, -0.11] | 0.02 | 2,505.29 | -7.17 | <.001 |
| Significance | -0.12 | [-0.17, -0.07] | 0.03 | 2,497.55 | -4.62 | <.001 |
| Study 4 | | | | | | |
| Mind-wandering | -0.04 | [-0.05, -0.02] | 0.01 | 5,948.54 | -6.24 | <.001 |
| Concealment | 0.03 | [0.01, 0.04] | 0.01 | 5,705.97 | 3.52 | <.001 |
| Engage | -0.06 | [-0.09, -0.02] | 0.02 | 5,605.15 | -3.31 | <.001 |
| Suppress | -0.10 | [-0.13, -0.07] | 0.02 | 5,675.27 | -6.46 | <.001 |
| Significance | -0.13 | [-0.16, -0.09] | 0.02 | 5,525.97 | -7.14 | <.001 |

Note. CI = confidence interval.

Keeping a secret for strategic reasons should benefit well-being, after accounting for its harmful aspects (e.g., the tendency to think about the secret; see Liu & Slepian, 2018; see also Kelly & Yip, 2006; Maas et al., 2011, 2019).

Temporal focus of mind-wandering as a moderator to well-being

Hypothesis. Finally, we predicted that the relationship between mind-wandering and well-being would be moderated by the temporal focus of participants' mind-wandering.

Analysis. We conducted the same analysis as in the preceding section, but with the addition of the interaction terms between future-focus and mind-wandering and past-focus and mind-wandering.

Future-focus did not interact with mind-wandering frequency to predict well-being in Study 3, $b = 0.005$, 95% CI = [-0.01, 0.02], $SE = 0.01$, $t(2,425.51) = 0.76$, $p = .45$, or Study 4, $b = -0.005$, 95% CI = [-0.01, 0.003], $SE = 0.004$, $t(5,404.44) = -1.23$, $p = .22$.

In both studies, past-focus interacted with mind-wandering frequency to predict well-being, Study 3, $b = -0.02$, 95% CI = [-0.03, -0.01], $SE = 0.005$, $t(2,380.24) = -5.06$, $p < .001$; Study 4, $b = -0.017$, 95% CI = [-0.023, -0.012], $SE = 0.003$, $t(5,383.59) = -5.94$, $p < .001$.

We thus examined the simple slopes of mind-wandering frequency on well-being at each level of past-focus (Table 12). That is, rather than assess the moderator at two arbitrary values to explore the interaction (e.g., $\pm 1 SD$; Aiken & West, 1999), we tested the relationships at each whole-number value of past-focus (the "floodlight approach," Spiller et al., 2013; see Table 12). For reference, we also assess the moderator at $\pm 1 SD$.

In both studies (Table 12), mind-wandering frequency predicted lower well-being when participants were more past-focused (bottom, darker shading). When participants

were less past-focused (top, lighter shading), mind-wandering was actually linked to greater well-being.

Discussion

A recent development in research on secrecy is recognizing that the harm of secrecy seems more based in intrapersonal experiences of mind-wandering to secrets than interpersonal experiences of concealment (Slepian et al., 2017; Slepian & Moulton-Tetlock, 2019). The present studies replicate this relationship, with an important nuance. Studies 3 and 4 clarify that this depends on the temporal focus of one's mind-wandering. Seeking to engage with thoughts of secrets predicts increased mind-wandering to secrets, which is associated with harm when focusing more on the past, and associated with benefits when focusing less on the past. In contrast, focusing more (vs. less) on the future did not moderate the relationship between mind-wandering and well-being.

One notable temporal asymmetry is that while one can change their actions into the future, one cannot do so for the past. Regrets and counterfactual thinking are thus exclusive to reflections on the past, which may explain why focusing on the past was associated with more harm.

General Discussion

The current work presents the first investigation into the thought control strategies people use to deal with their secrets. The current work took a novel approach, relative to past work on thought suppression. Asking participants to suppress secrets on-demand will have little resemblance to how these processes play out in daily life (i.e., thought suppression is often volitional rather than externally enforced). Instead, we measured participants' general orientations

Table 12. The Effect of Mind-Wandering on Well-Being as a Function of Temporal Focus, Studies 3 and 4.

| Past focus (1–7) | <i>b</i> | <i>SE</i> | 95% CI on <i>b</i> | | <i>t</i> | <i>p</i> value | Mind-wandering to well-being |
|------------------|----------|-----------|--------------------|---------|----------|----------------|-------------------------------|
| | | | UL | LL | | | |
| Panel A—Study 3 | | | | | | | |
| 1.00 | .08 | .02 | .04 | .11 | 4.09 | <.0001 | Positive link at these levels |
| 1.44 (–1 SD) | .07 | .02 | .03 | .10 | 3.88 | .0001 | |
| 2.00 | .05 | .02 | .02 | .08 | 3.53 | .0004 | |
| 3.00 | .03 | .01 | .01 | .06 | 2.59 | .01 | |
| 4.00 | .01 | .01 | –.01 | .03 | 1.10 | .27 | |
| 5.00 | –.01 | .01 | –.03 | .01 | –0.88 | .38 | Negative link at these levels |
| 5.57 (+1 SD) | –.02 | .01 | –.04 | –.00004 | –2.01 | .05 | |
| 6.00 | –.03 | .01 | –.05 | –.01 | –2.76 | <.0001 | |
| 7.00 | –.05 | .01 | –.08 | –.03 | –4.01 | <.0001 | |
| Panel B—Study 4 | | | | | | | |
| 1.00 | .05 | .01 | .03 | .07 | 4.01 | <.0001 | Positive link at these levels |
| 1.73 (–1 SD) | .04 | .01 | .01 | .06 | 3.33 | .001 | |
| 2.00 | .03 | .01 | .01 | .05 | 3.02 | .003 | |
| 3.00 | .01 | .01 | –.004 | .03 | 1.42 | .16 | Negative link at these levels |
| 4.00 | –.01 | .01 | –.02 | .01 | –1.17 | .24 | |
| 5.00 | –.03 | .01 | –.04 | –.02 | –4.71 | <.001 | |
| 5.86 (+1 SD) | –.04 | .01 | –.05 | –.03 | –7.34 | <.0001 | |
| 6.00 | –.05 | .01 | –.06 | –.03 | –7.66 | <.0001 | |
| 7.00 | –.06 | .01 | –.08 | –.05 | –8.91 | <.0001 | |

Note. CI = confidence interval; UL = upper limit; LL = lower limit.

toward thought control strategies of suppression, and also engagement. Our observations shed new light on the experience of secrecy, showing that when it comes to life's more pressing and stressing issues (i.e., those with the most significance), people do not prefer to suppress—they prefer to engage.

We found a consistent pattern whereby with increasing significance, people preferred thought engagement over thought suppression. Or, restated: only with *decreasing* significance did people prefer thought suppression to thought engagement. One possibility is that the more trivial the secret, the less there is a pressing need to deal with it, hence leading individuals to choose suppression rather than engagement for trivial secrets. Yet, even if the causal direction goes the other way—that thought suppression causes the secret to feel less significant, this would be inconsistent with the typical thought suppression account (that sees a major source of harm as stemming from attempts to suppress, which lead to increased thoughts and increased significance; see Wegner & Lane, 1995; Wenzlaff & Wegner, 2000).

Prior work has focused on secrecy as acts of concealment during social interactions. Yet, this is a narrow slice of the experience of secrecy. Far more frequently, people think about their secrets outside of concealment contexts (Slepian et al., 2017). Moreover, when examining the frequency of both concealment and mind-wandering to secrets as predictors of well-being, only mind-wandering predicts lower well-being (Slepian et al., 2017; Slepian & Moulton-Tetlock, 2019).

Our studies suggest that people want to think through personal struggles, particularly when they consider them significant. With secrets, one deprives oneself of the helpful conversations one could have with others (Slepian et al., 2019; Slepian & Moulton-Tetlock, 2019), rendering it all the more important to spend time thinking through the secret so as to move past it. Yet, if the goal of thought engagement is to help cope with a secret, then why is the tendency to think about one's secret related to lower well-being? Thought engagement can benefit health and well-being (Pennebaker & Chung, 2007), but there are exceptions (e.g., Lepore & Kernan, 2009; Park, 2010). One review suggested that when focused on concrete details (rather than on abstract causes and meaning), thought engagement is constructive, and thus healthy (Watkins, 2008). This is at odds, however, with the benefits of finding meaningful narratives to cope with stressors (Smyth et al., 2001). We introduce a different distinction: distinguishing past-focused from future-focused thought. Studies 3 and 4 found that to the extent mind-wandering to secrets was past-focused, it was associated with harm to well-being. In fact, when less past-focused, mind-wandering to secrets was associated with higher well-being.

Interestingly, levels of future focus did not moderate the relationship between mind-wandering to secrets and well-being. Therefore, it does not seem that one needs to plan for the future to benefit well-being today. Rather than focusing

on the unchangeable past, the mind-wandering benefit to well-being may require some focus on the present. This observation is consistent with a range of literature demonstrating the benefits of mindfulness and present-focus for well-being (Brown et al., 2007; Brown & Ryan, 2003). Thus, rather than interventions prompting individuals to search for meaning—which can help or hurt (Bonanno, 2013; Park, 2010)—interventions might instead have people focus less on the past, and more on the present.

This work paints a highly different picture of thought suppression and secrecy than has past work. Past work has focused primarily on thought suppression as a control strategy for concealment (Lane & Wegner, 1995; Wegner & Lane, 1995). The present findings suggest that people also seek to engage with thoughts of secrets, which is especially true for secrets considered to be significant, and that the harm of secrecy is linked more to mind-wandering to secrets than to concealing them. Of course, these findings come with a number of cautions. A notable limitation of the current work is that it does not allow for causal inference. Therefore, additional work is needed to determine causal relationships linking thought control strategies with secrets, experiences with mind-wandering to and concealing secrets, and well-being.

Whereas the present work examined thought control strategies in everyday life, past work has focused on thought control strategies in situations where the need to conceal (i.e., in a social interaction) is imminent (Lane & Wegner, 1995). The present studies therefore do not cast doubt on the idea that thought suppression can create a vicious and harmful cycle. That may still be true in certain contexts (e.g., novel secrets one has never attempted to suppress before). Yet, the present findings, which linked thought engagement with mind-wandering (and not thought suppression) do suggest that future work should revisit the idea that thought suppression creates vicious cycles of rumination in nonclinical samples.

Indeed, experimental instruction to suppress thoughts that participants intrinsically *want* to suppress (of which people may have practice suppressing) has not been found to lead to ironic effects (Behar et al., 2005; Janeck & Calamari, 1999; Kelly & Kahn, 1994; Luciano et al., 2007; Mathews & Milroy, 1994; Purdon & Clark, 2001; Roemer & Borkovec, 1994). We thus caution against an experiment that externally imposes a novel thought suppression target upon a participant; such a design hardly resembles the phenomenon of interest (having a personally relevant thought come to mind naturally, and seeking on one's own accord to suppress throughout the day).

Conclusion

The current work introduced a measure of seeking suppression and engagement with thoughts of a secret. This measure does not impose thought control strategies on participants, does not introduce monitoring processes they would

not normally engage in, and can be applied to thoughts that participants seek to naturally control. This measure predicted daily suppression and engagement and could be utilized on other thoughts beyond secrets.

People do not only seek to suppress thoughts of secrets, but also seek to engage with them, particularly when it comes to significant secrets. Seeking thought suppression did not predict an increased tendency to think about the secret, whereas seeking to engage with thoughts of a secret did: for better and worse. When trying to think through a secret, focusing more on the past is related to lower well-being, whereas focusing less on the past is related to higher well-being.

Appendix

Validation of Well-Being Measure

In Studies 2 to 4, prior to completing the Common Secrets Questionnaire, participants completed the Satisfaction with Life Scale (Diener et al., 1985), a widely used and validated measure of well-being (e.g., “In most ways my life is close to my ideal,” from 1 = *strongly disagree* to 7 = *strongly agree*; Study 2, $M = 4.28$, $SD = 1.38$, 95% CI = [4.08, 4.47]; Study 3, $M = 4.53$, $SD = 1.46$, 95% CI = [4.32, 4.73]; Study 4, $M = 4.43$, $SD = 1.44$, 95% CI = [4.29, 4.58]). This scale came first so it could not have been influenced by having reflected on one's secrets.

We measured this scale as a means of validation for our one-item and three-item scales of the impact of a secret on well-being, from Studies 2, and 3 to 4, respectively. Given that well-being varies on the level of secrets (each secret has its own perceived impact on well-being) and that global life satisfaction varies at the level of individual, responses to the life satisfaction measure need to be modeled as a predictor of well-being from secrets (i.e., otherwise one cannot predict a value that is constant per individual). There was indeed a positive relationship between well-being from secrets and global life satisfaction in each study, Study 2, $b = 0.21$, 95% CI = [0.11, 0.32], $SE = 0.05$, $t(185.91) = 4.01$, $p < .0010$; Study 3, $b = 0.24$, 95% CI = [0.14, 0.34], $SE = 0.05$, $t(176.80) = 4.65$, $p < .0001$; Study 4, $b = 0.52$, 95% CI = [0.40, 0.63], $SE = 0.06$, $t(379.17) = 8.79$, $p < .0001$. Thus, our measure of the well-being impact of a secret is associated with a validated measure of global well-being.

The Satisfaction with Life Scale appeared on the first page of the study, followed by the main study on secrecy. This was a deliberate design choice, the hope being that having begun the study already, those inclined to jump out (at the mention of secrecy) would continue on due to the feeling of sunk costs (i.e., having already answered questions). An advantage of this design choice is that we can compare the 801 participants who completed Studies 2 to 4 with the 211 participants who completed the life satisfaction scale, and then did not complete the study. Participants who *did* complete the study did

not have a level of life satisfaction ($M = 4.42$, $SD = 1.42$, 95% CI = [4.32, 4.52]) that was different from those who *did not* complete the study ($M = 4.35$, $SD = 1.53$, 95% CI = [4.14, 4.55]), $t(1,010) = 0.64$, $p = .52$, $d = 0.05$, 95% CI = [-0.10, 0.19]. In other words, participants who took part in a study on secrecy did not differ from those who chose not to take such a study on relevant variables (i.e., well-being). Thus, we do not see selective attrition on variables related to present hypotheses (see Zhou & Fishbach, 2016).

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ORCID iD

Michael L. Slepian  <https://orcid.org/0000-0002-4728-2178>

Supplemental Material

Supplemental material is available online with this article.

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