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BRIEF REPORT

Shame, Guilt, and Secrets on the Mind

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Recent work suggests that what is harmful about secrecy is not active concealment within social interactions but rather mind wandering to a secret outside of concealment contexts. However, it is not yet clear what predicts mind wandering to and concealing secrets. We proposed that emotional appraisals of shame and guilt for secrecy would predict how secrecy is experienced. Four studies with 1,000 participants keeping more than 6,000 secrets demonstrated that shame was linked with increased mind wandering to the secret. Guilt, in contrast, was linked with reduced mind wandering to the secret. The current work represents the first test of how emotions from secrecy determine how that secrecy is experienced.

Keywords: secrecy, mind wandering, concealment, shame and guilt, well-being

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People keep secrets, but secrecy comes with well-being costs. Secrecy has been correlated with depression, anxiety, and lower physical health (Cole, Kemeny, Taylor, & Visscher, 1996; Larson & Chastain, 1990; Larson, Chastain, Hoyt, & Ayzenberg, 2015; Lehmiller, 2009). Prior models of secrecy have suggested that secrecy causes damage via concealment (Critcher & Ferguson, 2014; Lane & Wegner, 1995; Pennebaker, 1997). Recent research, however, finds that it is the frequency of mind wandering to (not concealing) secrets that reliably predicts lower well-being (Slepian, Chun, & Mason, 2017; see also Maas, Wismeijer, & van Assen, 2018; Maas, Wismeijer, van Assen, & Aquarius, 2011; Quinn & Chaudoir, 2009; Quinn et al., 2014). How emotion plays into this process, however, remains untested.

Self-conscious emotions should have important implications for secrecy. Unlike more basic emotions (e.g., anger, fear), which can refer to external targets, self-conscious emotions center on the self. Secrets often consist of negative self-relevant information (Slepian et al., 2017; Slepian, Halevy, & Galinsky, 2018). Thus, negative self-conscious emotions—elicited through a reflection on how an event is relevant to self-representations (Tracy & Robins, 2004)—are likely to be relevant. Shame and guilt, in particular, refer to the private self, which is central to secrecy whereby the self privately intends to conceal information from others (unlike embarrassment, for instance, which refers to the public self; Tracy & Robins, 2007). Additionally, these emotions are tied to moral reasoning (Tracy et al., 2007), and secrets often involve moral violations (Slepian & Bastian, 2017).

Guilt and shame are associated with different appraisals and phenomenologies. For instance, guilt is associated with negative evaluations of the one's behavior and feeling remorse or regret, and shame is associated with negative evaluations of the self and feeling helpless or small (Niedenthal, Tangney, & Gavanski, 1994; Tangney & Dearing, 2003; Schmader & Lickel, 2006; Tracy et al., 2007).

Recent work suggests that having to conceal a secret in a social interaction should primarily track how often one encounters conversations related to the secret topic, whereas repetitive mind wandering to a secret should track more maladaptive coping efforts (Liu & Slepian, 2018; Slepian et al., 2017; Slepian & Moulton-Tetlock, 2018). As such, we predict that shame and guilt will be related to mind wandering rather than concealment. Features of guilt (negative evaluation of the behavior, remorse) can prompt adaptive coping with stressors, whereas features of shame (negative evaluation of the self, helpless) prompt relatively maladaptive coping (Tangney, 1993). Thus, we theorize that shame will predict increased repetitive mind wandering to a secret, whereas guilt will predict reduced mind wandering to a secret.

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Studies 1a and 1b

Method

Participants (Study 1a, $N = 200$; 67 men, 133 women; $M_{age} = 33.42$ years, $SD = 11.05$; Study 1b, $N = 200$; 81 men, 119 women; $M_{age} = 32.53$ years, $SD = 10.46$) were given the Common Secrets Questionnaire (CSQ; Slepian et al., 2017). This questionnaire presents 38 categories of common secrets (see Figure 1). When asked to recall a current secret, there is a 92% chance of the secret recalled matching one of these 38 categories, with 97% of participants reporting currently having at least one of the categories of secrets (Slepian et al., 2017). Participants were asked per each, whether they personally have that secret. Participants were recruited on Mechanical Turk, ensuring anonymity and a sample more diverse than a college student sample.

For each secret participants had (of the 38 categories), participants completed measures of shame and guilt surrounding that secret, adapted from Marschall, Saftner, and Tangney (1994). "When it comes to this secret, I feel . . ." three shame items, "like I am a bad person," "worthless and small," "helpless and power-

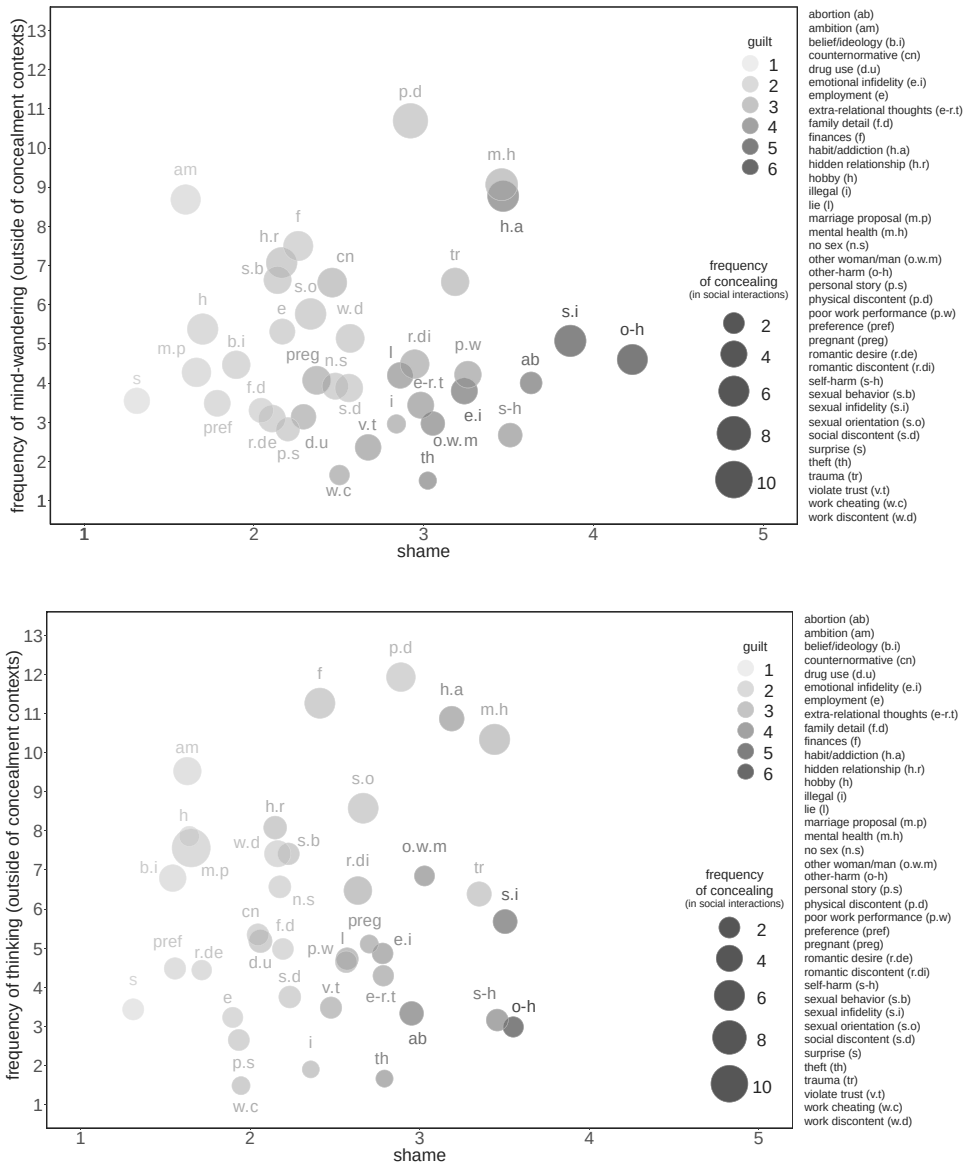


Figure 1. For full descriptions of each category of secret, see the Common Secrets Questionnaire (Slepian, Chun, & Mason, 2017). Top panel, Study 1a; bottom panel, Study 1b. Felt shame (Study 1a, $M = 2.57$, $SD = 1.80$, 95% CI [2.50, 2.64]; Study 1b, $M = 2.37$, $SD = 1.74$, 95% CI [2.30, 2.43]) with a secret plotted against frequency of mind wandering, diameter of circle representing average frequency of concealing, and (continuous) shade of circle, average level of guilt (Study 1a, $M = 2.81$, $SD = 2.02$, 95% CI [2.74, 2.89]; Study 1b, $M = 2.57$, $SD = 1.91$, 95% CI [2.50, 2.64]). See the online article for the color version of this figure.

less" (Study 1a, $R_{KF} = .99$, $R_C = .81$; Study 1b, $R_{KF} = .99$, $R = .84$) and three guilt items, "bad about something I have done," "tension about something I have done," "remorse and regret about something I have done" (1, *not at all*, to 7, *very much*; Study 1a, $R_{KF} = .99$, $R_C = .91$; Study 1b, $R_{KF} = .99$, $R_C = .91$).[1]

Subsequently, participants reported the number of the times in the past 30 days they were (a) not with someone from whom they were keeping the secret but found themselves spontaneously thinking about it (when not relevant to the context at hand), and (b) the number of times they were interacting with someone from whom they were keeping the secret and felt they had to prevent themselves from revealing the secret, and thus conceal the secret during the social interaction (Slepian et al., 2017; Slepian & Moulton-Tetlock, 2018). To ensure any effects were not a function of the significance of the secret, Study 1b also asked how significant each secret was (1, *not at all*, to 7, *very much*). All studies received institutional review board approval from Columbia University.

Results

When given an honesty check at the end of the study, participants who indicated they fabricated answers (Study 1a, $n = 3$; Study 1b, $n = 9$) were removed from analysis. Study 1a results are presented alongside Study 1b [in brackets]. Of the remaining 197 [191] participants, 192 [185] currently had at least one of the categories of secrets, with the average participant having 14.24 [14.69] secrets.

Outlier removal. Given that free responses of estimated frequencies of mind wandering and concealing secrets were unbounded, we used the adjusted boxplot to identify outliers (as per Slepian et al., 2017).[2] This method identified four [seven] outlying responses, 0.07% [0.12%] of the data, from one [four] participant[s] who indicated mind wandering to or concealing secrets more than 124 [155] times in a month, yielding 2,770 [2,797] secrets to analyze.

Mean comparisons. A multilevel model examined frequency of responses by type (mind wander vs. conceal), which estimated people concealed their secret 3.01 [2.69] times in a month (intercept), whereas they mind wandered to their secret 4.84 [5.69] times in a month (intercept plus slope), $b = 1.83$, 95% confidence interval (CI) [1.49, 2.17], $SE = 0.17$, $t(5343.45) = 10.53$, $p < .0001$ [$b = 3.01$, 95% CI [2.54, 3.48], $SE = 0.24$, $t(5382.26) = 12.48$, $p < .0001$].[3]

Multilevel modeling each individual secret, we entered the level of shame and guilt from that secret as predictors of how frequently participants mind wandered to (concealed) their secret while also accounting for how frequently participants concealed (mind-wandered to) their secret as per prior work (Slepian et al., 2017; Slepian & Moulton-Tetlock, 2018).

Study 1a.

Frequency of mind wandering. Shame from a secret predicted increased frequency of mind wandering to the secret, $b = 0.59$, 95% CI [0.33, 0.84], $SE = 0.13$, $t(2736.05) = 4.45$, $p < .0001$, whereas there was no relationship with guilt, $b = 0.03$, 95% CI [−0.19, 0.24], $SE = 0.11$, $t(2560.23) = 0.25$, $p = .80$.

Frequency of concealing. A parallel analysis predicting frequency of concealing revealed no effect of shame, $b = 0.12$, 95% CI [−0.07, 0.31], $SE = 0.10$, $t(2746.45) = 1.23$, $p = .22$, nor guilt, $b = 0.10$, 95% CI [−0.05, 0.26], $SE = 0.08$, $t(2672.91) = 1.28$, $p = .20$.

Study 1b.

Frequency of mind wandering. Shame from a secret predicted increased frequency of mind wandering to the secret, $b = 2.21$, 95% CI [1.82, 2.59], $SE = 0.20$, $t(2573.82) = 11.30$, $p < .0001$, whereas guilt predicted reduced mind wandering, $b = -1.23$, 95% CI [−1.57, 0.89], $SE = 0.17$, $t(2114.12) = -7.06$, $p < .0001$.

Frequency of concealing. A parallel analysis predicting concealing revealed no effect of shame, $b = 0.06$, 95% CI [−0.19, 0.32], $SE = 0.13$, $t(2652.58) = 0.50$, $p = .62$, but that guilt predicted an increased frequency of concealing, $b = 0.32$, 95% CI [0.09, 0.54], $SE = 0.11$, $t(2230.85) = 2.75$, $p = .006$.

Controls. These effects were unchanged when controlling for the significance of the secret (measured in Study 1b, supplemental material). Whereas these results conceptually and empirically generalize across the diversity of secrets studied, we plot the results aggregated at the category of secret for the interested reader (see Figure 1).

Studies 2a and 2b

In Studies 1a and 1b, shame was consistently linked with increased mind wandering to secrets, yet these studies were correlational, precluding causal claims. Additionally, our measures of shame and guilt captured both phenomenology of shame and guilt but also the distinction between a negative evaluation of the self versus behavior, respectively. Whereas shame and guilt are often differentiated evaluation of the self versus behavior (Niedenthal et al., 1994; Tangney, 1993; Tracy & Robins, 2006), there are exceptions to this link, and shame and guilt can be differentiated in other ways (de Hooge, Breugelmans, & Zeelenberg, 2008; de Hooge, 2014; Gausel & Leach, 2011; Schmader et al., 2006).

Building on Studies 1a and 1b, Studies 2a and 2b took an experimental approach, asking participants to recall secrets associated with shame and guilt phenomenology without explicit reference to evaluation of the self versus behavior. We measured whether this new experimental secrecy recall prompt differentially evoked feelings of shame and guilt, using new measures, not based on a self-behavior distinction. Finally, Study 2b examined whether shame and guilt (prompted from the experimental recall) predicted mind wandering to, and concealment of, the secret (over the course of a day), over and above other emotions and other qualities of the secret.

Method

Participants (Study 2a, $N = 200$: 83 men, 117 women; $M_{age} = 34.72$ years, $SD = 10.11$; Study 2b, $N = 400$: 182 men, 218 women; $M_{age} = 37.17$ years, $SD = 12.55$), recruited on Mechanical Turk, were asked to recall a current secret. Given the large range of secrets

[1] Multilevel reliability for shame and guilt items were calculated using equations from Shrout and Lane (2012); R_{KF} = reliability across all participants; R_C = reliability within participants.

[2] Standard deviation–based exclusion is problematic; the standard deviation used to determine the cutoff is itself biased by extreme outliers (Hubert & Vandervieren, 2008; Seo, 2006).

[3] R-packages lme4 and lmerTest ran multilevel models through Satterthwaite approximation tests to calculate p values (scaling model estimates to approximate the F-distribution to estimate degrees of freedom, which are thus nonwhole numbers; Kuznetsova, Brockhoff, & Christensen, 2013).

that could be recalled, to reduce variance, we held the target of the secret constant (i.e., one's partner; as in Slepian et al., 2017). Only participants in a committed relationship were recruited and asked to recall a secret kept from their partner.

Manipulation of secrecy recall. In both conditions, participants were asked to recall something their partner does not know about that they are purposefully keeping secret. In the shame condition, it was specified the secret should make them feel small, worthless, or powerless. In the guilt condition, it was specified the secret should make them feel remorse, tension, or regret. These terms were drawn directly from a comprehensive review of the difference between shame and guilt (Tangney & Dearing, 2003) and do not specifically reference a target for these feelings (i.e., neither specifically the self or behavior).

Measure of shame and guilt. We implemented a new measure of shame and guilt (drawn from Schmader et al., 2006), asking participants the extent to which (1, *not at all*, to 9, *very intensely*) the secret made them feel ashamed, humiliated, disgraced, embarrassed (shame; $\alpha_{Study2a} = .92$, $\alpha_{Study2b} = .92$) and guilty, regret, sorry, remorse (guilt, $\alpha_{Study2a} = .90$, $\alpha_{Study2b} = .94$), items intermixed.

Controls. Participants also completed measures of how much the secret made them feel other negative emotions (the control negative emotions from Schmader et al., 2006): anger (anger, offended, upset; $\alpha_{Study2a} = .80$, $\alpha_{Study2b} = .83$), sad (hurt, sad, depressed, disappointed, $\alpha_{Study2a} = .91$, $\alpha_{Study2b} = .90$), and anxious (nervous, anxious, $\alpha_{Study2a} = .93$, $\alpha_{Study2b} = .94$).

Study 2b also measured the significance of the secret (important, significant), its positivity, and negativity (each from 1, *not at all*, to 7, *very much*).

Study 2a. Study 2a was an initial test of whether the new manipulation differentially evoked shame and guilt.

Study 2b. Study 2b was conducted in two sessions and doubled Study 2a's sample size (anticipating participant attrition). In the morning (approximately 10 a.m. ET), participants received the secrecy recall manipulation (from Study 2a), and we measured the shame and guilt the secret evoked (and the aforementioned controls).

In the second session, conducted at the end of the night (posted approximately 8 p.m. ET), participants reported the number of times they thought about their secret (when not with their partner) and had to conceal the secret (when interacting with their partner) during the course of the day, allowing us to examine whether increases in shame and guilt predicted increased mind-wandering to and concealing secrets throughout the day. Participants were contacted for the second part by using TurkPrime (Litman, Robinson, & Abberbock, 2017; see SOM for additional detail).

Results

Study 2a descriptives are presented alongside Study 2b [in brackets]. Those who did not have a secret to recall (18 [41]), those who failed a manipulation check (asking whether their partner was aware of the thing they wrote about, 10 [16]), or those who failed an honesty check (asking whether they recalled a true secret, three [seven]) were excluded.

In Study 2b, the remaining participants ($N = 336$) were invited to participate in Session 2, and 161 completed Session 2 (with a tendency for participants in the shame condition to more return, 56%, than those in the guilt condition, 45%; $\chi^2 = 3.605$, $p = .058$). As in the earlier studies, the adjusted boxplot identified outliers, nine outlying responses (2.87% of the data) from participants who indicated mind wandering to or concealing their secret more than 10 times during the day.

Shame and guilt (Studies 2a & 2b). We first examined the effect of the experimental prompt on relative feelings of shame (independent of guilt), and guilt (independent of shame) to parallel Studies 1a–1b analyses. We also included the other negative emotions as controls.

In both Studies 2a and 2b, asking participants to recall a secret that made them feel small, worthless, or powerless evoked feelings of shame, independent of guilt and the control negative emotions. Asking participants to recall a secret that made them feel remorse, tension, or regret evoked feelings of guilt, independent of shame and the control negative emotions (see Table 1). In Study 2b, the effects held when including the positive and negative valence of the secret as well as when also including the significance of the secret (supplemental material).

Mind wandering and concealment (Study 2b). Prior work utilizing prompts that ask participants to recall different kinds of secrets (as a manipulation) demonstrates the importance of capturing the extent to which the prompts evoke the intended kind of secret (Slepian, Masicampo, & Galinsky, 2016). Thus, in testing our central prediction that secrets that evoke shame will be most mind wandered to, we examine whether our manipulation influenced the extent of mind wandering and concealment throughout the day through feelings of shame and guilt.

Table 2 presents all effects, each pathway and indirect effect (see supplemental material for additional models that control for qualities of the secret). In each model, the experimental prompt (recalling shame vs. guilt) reliably specifically increased mind wandering throughout the day a function of evoked shame.

Whereas guilt did predict reduced mind wandering to the secret, the indirect effect through guilt was not significant. This is likely a consequence of the guilt secrecy recall prompt evoking feelings of guilt to a only small (but significant) level, whereas the shame secrecy recall prompt evoked feelings of shame more reliably.

Table 1
Study 2a

Predictor	Prediction of emotions				
	B	95% CI on *b*	*SE*	*t*	*p*
Predicting shame, intercept = .34					
Recall	**.67**	**[.19, 1.14]**	**.24**	**2.75**	**.007**
Guilt	.39	[.24, .55]	.08	5.11	<.0001
Anger	.31	[.15, .48]	.08	3.77	.0002
Sadness	.20	[.02, .38]	.09	2.21	.03
Anxious	.06	[−.05, .17]	.06	1.01	.31
Predicting guilt, intercept = 2.42					
Recall	**.54**	**[.09, .99]**	**.23**	**2.35**	**.02**
Shame	.35	[.22, .49]	.07	5.11	<.0001
Anger	−.11	[−.27, .05]	.08	−1.37	.17
Sadness	.40	[.24, .56]	.08	4.91	<.0001
Anxious	.10	[−.003, .21]	.05	1.93	.06

Note. When predicting Shame, bolded Recall variable is coded 0 = Guilt, and 1 = Shame. When predicting Guilt, bolded Recall variable is coded 1 = Guilt, and 0 = Shame ($df = 163$).

Table 2
Study 2b

Predicting shame and guilt						Predicting mind wandering and concealment throughout the day							
Coefficients for a path in indirect effect						Coefficients for b path in indirect effect					Indirect effect of recall		
b	95% CI on *b*	*SE*	*t*	*p*	Predictor	*b*	95% CI on *b*	*SE*	*t*	*p*	*IE*	95% CI	*SE*
Predicting shame, intercept = −.01						Predicting mind wandering throughout the day (DV), intercept = 1.91							
					Shame	**.24**	**[.03, .46]**	**.11**	**2.21**	**.03**	**.15**	**.02, .44**	**.10**
.44	[.36, .53]	.05	9.81	<.0001	**Guilt**	**−.26**	**[−.47, −.06]**	**.10**	**−2.54**	**.01**	**−.10**	**−.49, .01**	**.10**
.65	**[.32, .99]**	**.17**	**3.82**	**.0002**	**Recall**	−.66	[−1.37, .05]	.36	−1.84	.07			
.28	[.16, .40]	.06	4.63	<.0001	Anger	.16	[−.08, .41]	.13	1.31	.19			
.10	[−.02, .22]	.06	1.62	.11	Sadness	.08	[−.17, .34]	.13	.62	.53			
.14	[.07, .22]	.04	3.69	.0003	Anxious	−.02	[−.19, .16]	.09	−.19	.85			
Predicting guilt, intercept = 2.35						Predicting concealment throughout the day (DV), intercept = .60							
					Guilt	**−.12**	**[−.27, .03]**	**.08**	**−1.56**	**.12**	−.05	−.19, .001	.05
.51	[.41, .61]	.05	9.81	<.0001	**Shame**	**.11**	**[−.04, .27]**	**.08**	**1.42**	**.16**	.07	−.0002, .23	.06
.37	**[.005, .74]**	**.19**	**1.99**	**.05**	**Recall**	.54	[.03, 1.05]	.26	2.08	.04			
−.08	[−.21, .05]	.07	−1.20	.23	Anger	.09	[−.09, .27]	.09	1.01	.31			
.25	[.13, .38]	.06	3.95	.0001	Sadness	.07	[−.11, .26]	.09	.77	.44			
.04	[−.04, .12]	.04	.95	.34	Anxious	.02	[−.11, .14]	.06	.28	.78			

Note. Critical tests in bold. To read Table 2, start with the Predictor column and read to the left for the effects of the Recall manipulation on feelings of shame and guilt. When predicting Shame, bolded Recall variable is coded 0 = Guilt, and 1 = Shame. When predicting Guilt, bolded Recall variable is coded 1 = Guilt, and 0 = Shame. Next, from the Predictor column, read to the right for the effects of resulting feelings of shame and guilt on mind wandering and concealment. The right-most column presents the indirect effects of the recall manipulation to mind wandering and concealment, through feelings of shame and guilt. The b path in the mediational model (middle columns) requires entering the recall manipulation, yet we do not consider effects of the recall manipulation on our outcomes meaningful when controlling for resulting feelings of shame and guilt (Session 1, left, $df = 326$. Session 2, right, $df = 146$). Descriptives presented as *M* (*SD*), [95% CI]. Shame: 5.18 (2.43), [4.92, 5.44], Guilt: 5.89 (2.29), [5.65, 6.14], Mind-wander: 2.12 (2.16), [1.78, 2.47], Conceal: .94 (1.56), [.69, 1.18], Anger: 3.68 (2.27), [3.32, 4.03], Sadness: 4.65 (2.48), [4.26, 5.04], Anxious: 5.06 (2.59), [4.66, 5.46].

Discussion

The current work (testing 1,000 people with more than 6,000 secrets) is the first to explore how emotions surrounding secrecy shape its experience, and suggests that self-conscious emotions may be an antecedent to the harmful effects of secrecy. Whereas neither shame nor guilt reliably predicted concealment of secrets, they did predict mind wandering to secrets. When a secret evoked feelings of shame, the secret was more likely to intrude upon one's thinking in irrelevant moments. This was demonstrated through retrospective recall of prior mind-wandering episodes and through an experimental secrecy recall prompt that increased mind wandering throughout the day as a function of evoking shame.

Future work should examine the mechanisms by which shame relates to mind wandering to secrets. Perhaps the threat to the self that is associated with shame (de Hooge, Zeelenberg, & Breugelmans, 2010) is linked to maladaptive coping styles as repetitive thought is a consequence of poor coping (Ottaviani, Shapiro, & Couyoumdjian, 2013; Wayment, Collier, Birkett, Traustadóttir, & Till, 2015). Perhaps the reparation motivation inherent to guilt (Schmader et al., 2006) promotes adaptive coping styles linked with reduced mind wandering. That said, the effect of guilt on mind wandering was heterogeneous (only significant in two of three studies), suggesting a complex relationship.

These studies are among the first to integrate emotions and secrecy, with much scope for future work. We examined self-conscious emotions. Future work could examine other-focused emotions (Lange & Crusius, 2015; Parkinson & Manstead, 2015) and dyadic processes (Adams & Inesi, 2016), which may be more central to concealment. Additionally, the secrets people keep are often negative (Slepian et al., 2017; Slepian, Camp, & Masicampo, 2015; Slepian, Halevy, & Galinsky, 2018). Additionally, confiding a secret in another person is likely influence levels of shame and guilt (see Slepian & Greenaway, 2018; Slepian & Kirby, 2018). Future work could examine the mechanisms by which shame and guilt predict mind wandering to secrets as well as how these process, in turn, predict well-being.

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