IS THE NEGATIVE ASSOCIATION BETWEEN SELF-CONCEALMENT AND SUBJECTIVE WELL-BEING MEDIATED BY MOOD AWARENESS?

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Previous studies found a negative relation between self-concealment and subjective well-being. The goal of this study is to investigate if this relation is, at least partly, mediated by mood regulation, that is, a preoccupation with one's mood states (mood monitoring), and the inability to label these mood states adequately (mood labeling). Using a Dutch student sample of 588 participants, we replicated the negative association between self-concealment and subjective well-being, and indeed found that this relation was partly mediated by mood monitoring and labeling. We conclude that self-concealment is associated with maladaptive mood regulation, which is characterized by scrutinizing one's negative moods without being able to label these and adequately act upon them. Implications for clinical practice are discussed.

Secrecy has long been associated with diminished well-being (e.g., Ellenberger, 1965). More recently, among others, Cole, Kemeny, Taylor, Visscher, and Fahey (1996) demonstrated in a sample of HIV+ gay men that degree of concealment of homosexual identity predicted disease progression. One must be careful, however, to conclude that keeping secrets is detrimental. Kelly and Yip (2006), for example, found that keeping a major secret was associated with *better* health outcome, if one controlled for the influence of keeping secrets as the expression of a personality trait. Kelly explicitly

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distinguishes between the tendency to keep secrets as a personality trait, and keeping secrets that is also driven by situational determinants (Kelly, 1998; Kelly, 2002).

The best known personality trait that determines whether one chooses to keep secrets is self-concealment (SC), introduced by Larson and Chastain (1990). SC refers to the stable tendency to conceal information from others, as opposed to secrecy as a function of situational determinants. It is defined as the "predisposition to actively conceal from others personal information that one perceives as distressing or negative" (Larson & Chastain, 1990, p. 440). Self-concealed personal information is a subset of private personal information, consciously accessible to the individual and actively kept from the awareness of others. It is negative in valence and, if disclosed at all, confided to only a small number of persons because of its highly intimate content (Larson & Chastain, 1990). This trait may explain why, in contrast to most people, some people spend more effort trying to conceal personal, intimate information (Cramer & Barry, 1999; Larson & Chastain, 1990), independent from environmental conditions. One can keep secrets without having high scores on SC, but it is unlikely to score high on SC without keeping secrets. That is, those with high scores on SC are propelled to keep secrets in most if not all domains of their lives.

SC is associated with a host of maladaptive processes, such as reluctance to seek social support and experiencing lower satisfaction with received social support (Cepeda-Benito & Short, 1998; Kelly & Achter, 1995; Wallace & Constantine, 2005). In addition, there is evidence showing that SC is positively related to anxiety (e.g., Pennebaker, Colder, & Sharp, 1990), depression (Kelly & Achter, 1995), and physical complaints, even after controlling for traumatic events and self-disclosure (Larson & Chastain, 1990; Pennebaker et al., 1990).

The first aim of this study is to evaluate the claim that SC is indeed negatively associated with subjective well-being. We operationalized subjective well-being both at a physical level and a psychological level, the latter being composed of three domains of life experience: self-reported subjective health status, life satisfaction, and psychological well-being. We further added a self-report measure of fatigue to obtain a more comprehensive picture of subjective well-being. In this paper, we refer to these four variables as "subjective well-being", except when the individual variables are specifically addressed. Our first hypothesis (H1) predicts that SC is nega-
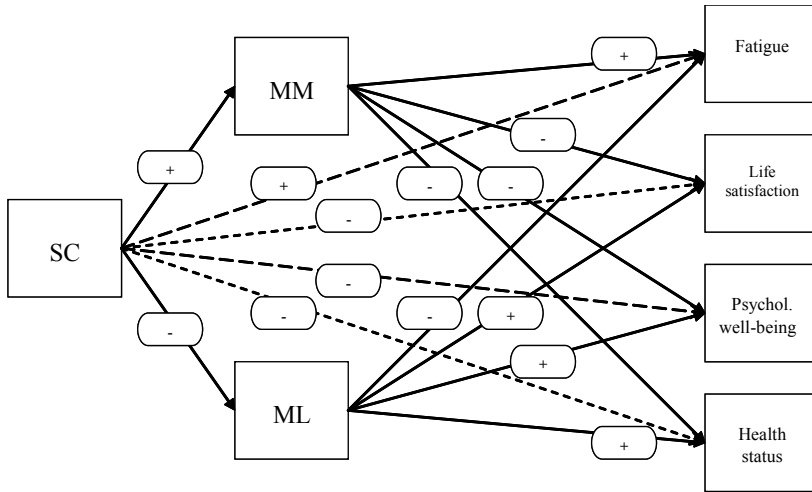
FIGURE 1. Hypothesized path model showing that the relation between self-concealment and subjective well-being is mediated by mood monitoring and mood labeling. Signs are added corresponding to our one-tailed hypotheses.
Note. SC = Self-concealment, MM = Mood Monitoring, and ML = Mood Labeling.

tively associated with self-reported physical health, psychological well-being, and life satisfaction, and positively related to fatigue. The arrows in Figure 1 that run from SC to the subjective well-being variables represent this hypothesis.

It is still unclear, however, why SC is associated with poorer health outcomes. To the best of our knowledge, there is no literature on the mechanism responsible for the association between SC and subjective well-being. One possible mechanism might be provided by the preoccupation model of secrecy (Lane & Wegner, 1995). Notwithstanding the earlier mentioned important conceptual difference between SC (trait) and secrecy (process) (Kelly & Yip, 2006), the preoccupation model of secrecy describes an interesting cognitive phenomenon that may also partially hold for SC. The model postulates that the act of keeping secrets initiates intentional thought suppression to prevent a slip-of-the-tongue or actions that might reveal the secret. However, in his well-known white-bear paradigm studies, Wegner (1992; 1994) demonstrated that intentional thought suppression leads to the paradoxical consequence of an increase,

rather than a decrease, of the frequency of intrusive thoughts about the suppressed information or secret, which, in their turn, also must be suppressed. This vicious circle might cause an obsessive preoccupation with the hidden information that can eventually result in psychopathology (Lane & Wegner, 1995). This theory can explain how keeping a secret may chronically affect the cognitions, and ultimately the subjective well-being, of the secret-keeper.

An interesting question is whether a similar form of a forward feedback loop mediates the relationship between SC and subjective well-being. One possibility is that SC is associated with suppressing negative mood states. When people see a person is experiencing a negative mood state, they tend to offer their support, usually in the form of talking with that person about his or her problems. However, SC is negatively related to help seeking behavior, and, additionally, King, Emmons, and Woodley (1992) found a positive correlation between SC and ambivalence over emotional expression. Therefore, by suppressing the negative mood states that one is experiencing, one may avoid that others detect these and hence may avoid having to disclose these to others. Yet, if Wegner's (1992, 1994) earlier described "ironic processes of mental control" also hold for the suppression of mood states, efforts to suppress one's mood state will rather result in an increase of attention directed towards that mood state.

The construct of mood awareness, introduced by Swinkels and Giuliano (1995), specifically refers to the amount of attention directed towards one's mood states. Mood awareness consists of two independent components (Swinkels & Giuliano, 1995): Mood Monitoring (MM) and Mood Labeling (ML). MM refers to the stable tendency to scrutinize and focus on one's moods, and implies a great involvement in the mood state itself, to the point of the individual wallowing in it. Mood Labeling (ML), in contrast, refers to completeness in understanding one's moods and being able to adequately label or categorize them. Hence, the scrutiny of mood states associated with MM should not be confounded with an increased *understanding* of one's mood state; it simply means that the individual is more aware of being in a specific mood. More precisely, whereas MM is associated with persistent vigilance for affect and affect changes that may lead to premature and inadequate mood regulation, ML is associated with accuracy in recognizing one's mood states, which may facilitate choosing appropriate mood regulation strategies (Van-Leeson, Totterdell, & Parkinson, 2006).

The second aim of the present study is to test if MM and ML mediate the relation between SC and subjective well-being. We postulate that SC is positively associated with an increased amount of attention directed towards emotional states due to a forward feedback loop of mood suppression-mood intrusion. Thus, our second hypothesis (H2) is that SC will be positively associated with MM.

Are there also reasons to suggest that ML is associated with SC? Although to date no studies exist that investigated if and how SC is associated with ML, there are some good reasons to expect that they are negatively related. For example, SC is positively associated with reluctance to seek social support (Potoczniak, Aldea, & DeBlaere, 2007; Yukawa, Tokuda, & Sato, 2007), which impedes gaining insight into one's mood states. That is, SC prevents benefiting from a supportive social environment in terms of feedback that promotes understanding and reflecting on one's own mood states. Although admittedly speculative, our third hypothesis (H3) therefore posits that the relation between SC and ML is negative (see Figure 1).

Further, MM can only mediate between SC and subjective well-being when not only SC is related to MM, but MM in its turn is also related to subjective well-being. MM is shown to be positively associated with negative affectivity (Swinkels & Giuliano, 1995), thought suppression, adopting a ruminative response style, and ruminating over negative experiences (Evans, Fassnacht, & Swinkels, 1999; King et al., 1992; Swinkels, Giuliano, & Helweg-Larsen, 1996). The fourth hypothesis (H4) focuses on the replication of these findings, and it predicts that MM is negatively associated with self-reported physical health, psychological well-being, and life satisfaction, and positively associated with fatigue. The arrows in Figure 1 that run from MM to the subjective well-being variables represent this hypothesis. Hence, hypotheses H2 and H4 explicate the steps from SC to MM and from MM to subjective well-being, respectively.

In addition, an individual who is adept at labeling his or her moods can more quickly and easily turn his or her attention to other concerns such as the mood's likely duration, how his or her moods are affecting others, etc. Successful categorization of one's moods sets the stage for acting on that mood, and hence makes ML a successful positive emotion regulatory process (Swinkels & Giuliano, 1995). Indeed, ML is associated with positive affective consequences such as less social anxiety, lower negative affectivity subscale scores on the Positive Affect Negative Affect Schedule (PANAS), and higher general life satisfaction (Evans et al., 1999; Swinkels & Giuliano,

1995; Swinkels et al., 1996). Further, ML is also positively related to seeking social support and being satisfied with received social support (Swinkels & Giuliano, 1995). As positive emotion regulatory processes facilitate subjective well-being (e.g., Gross & John, 2003), we contend in our fifth hypothesis (H5) that ML is positively associated with self-reported physical health, psychological well-being, and life satisfaction, and negatively associated with fatigue (see Figure 1).

The final aim of this study is to test if the relation between SC and subjective well-being is mediated by MM and/or ML. After all, if SC is indeed related to high MM and low ML, and MM has detrimental effects on subjective well-being whereas ML has beneficial effects, the association between SC and subjective well-being, may, at least partly, be mediated by these processes. In hypothesis six (H6) we state that the detrimental effect of SC on subjective well-being diminishes after controlling for MM. In hypothesis seven (H7) we anticipate that the detrimental effect of SC on subjective well-being diminishes after controlling for ML.

To summarize, in the present study we test the following seven hypotheses:

- H1: SC is negatively associated with self-reported subjective health status, life satisfaction, and psychological well-being, and positively associated with fatigue;
- H2: SC is positively related to MM;
- H3: SC is negatively related to ML;
- H4: MM is negatively associated with self-reported subjective health status, life satisfaction, and psychological well-being, and positively related to fatigue;
- H5: ML is positively associated with self-reported subjective health status, life satisfaction, and psychological well-being, and negatively associated with fatigue;
- H6: MM at least partially mediates the effect of SC on self-reported subjective health status, life satisfaction, psychological well-being, and fatigue; and
- H7: ML at least partially mediates the effect of SC on self-reported subjective health status, life satisfaction, psychological well-being, and fatigue.

METHOD

PARTICIPANTS

The participants were 588 social and behavioral sciences students from Tilburg University in the Netherlands (209 were male [36%] and 379 [64%] were female). The age distribution (M = 22.8, SD = 3.0) was skewed to the right (skewness = 3.64), with a minimum and maximum age of 19 and 55 years, respectively. Men (M = 23.23, SD = 2.36) were on average slightly older than women (M = 22.61, SD = 3.25) [t(586) = 2.44, p = 0.015, two-tailed].

MEASURES

Self-concealment was assessed using the Self-Concealment Scale (SCS; Larson & Chastain, 1990; translated into Dutch by Finkenauer, Engels, & Meeus, 2002). The SCS measures the tendency to keep negatively valenced private and intimate information secret, and consists of ten items that are rated on 5-point adjectival scales (lowest score 1 means "does not apply to me," intermediate score 3 means "moderately applies to me," highest score 5 means "completely applies to me"). An item example is "I have a secret that is so private I would lie if anybody asked me about it." All items are positively worded with respect to the construct of interest, so that higher ratings indicate higher SC. Cronbach's alpha for the total score on the ten items was equal to .84.

Mood monitoring and *mood labeling* were measured with a Dutch translation of the Mood Awareness Scale (MAS; Swinkels & Giuliano, 1995). The MAS consists of ten items (four of which are negatively worded with respect to MM and ML) that are rated on 6-point Likert scales (lowest score 1 means "strongly disagree," intermediate scores 3 and 4 mean "somewhat disagree" and "somewhat agree," respectively, and highest score 6 means "strongly agree"). After recoding the negatively worded items, higher ratings on the subscales indicate more MM or ML. Examples of items are "I'm usually 'tuned in' to my emotions" (ML) and "I find myself thinking about my mood during the day" (MM). Cronbach's alpha's for ML (five items) and MM (five items) were equal to .77 and .83, respectively. There was no information on translation validity available, but our reliability estimates were in the same range as those report-

ed for the original version of the MAS (Evans et al., 1999; Swinkels & Giuliano, 1995)

Subjective health state, life satisfaction, and psychological well-being were measured using the Well-being and Perceived Health State (WPHS) questionnaire (Reimus, Vingerhoets, Soons, & Korstanje, 2007). The WPHS consists of 18 items (twelve of which are negatively worded with respect to the construct of interest), ten of which are questions and eight of which are statements. There are three distinct answer categories, all rated on 5-point rating scales. Depending on the question, categories range from: "not at all – very much," "never – all the time," or "not so satisfied – very satisfied." The items are divided over three subscales: (a) subjective health state (eight items), (b) life satisfaction (five items), and (c) psychological well-being (five items). After recoding the negatively worded items, higher ratings indicate better subjective health state, life satisfaction, and psychological well-being. Item examples are "I feel ill lately" (health state); "Do you find your life meaningful?"(life satisfaction); and "The past month I felt gloomy and down" (psychological well-being). Cronbach's alphas for subjective health state, life satisfaction, and psychological well-being were equal to .82, .72, and .80, respectively.

Fatigue was measured using the Fatigue Assessment Scale (FAS; Michielsen, De Vries, & Van Heck, 2003). The FAS is a 10-item questionnaire (of which two items are negatively worded with respect to fatigue) that is rated on 5-point rating scales (lowest score 1 means "not at all," intermediate score 3 means "regularly" and highest score 5 means "always"). After recoding, higher ratings indicate more fatigue. Cronbach's alpha was equal to .81.

PROCEDURE

The questionnaires were part of a larger questionnaire consisting of 173 questions in total, constructed by combining scales (mostly but not necessarily pilot versions) that researchers from the Faculty of Social and Behavioral Sciences wanted to test. Other scales included a prisoner's dilemma, a scale to measure psychological processes related to sports, etc. The participants were students following a course on questionnaire construction. Filling out the complete questionnaire was one requirement for passing the course. If, for whatever reasons, students did not want to fill out the question-

naire, they could instead complete a test on the use of SPSS to analyze questionnaire data. The students were told that their answers would be checked for missing and random responses. They were also told that respondents being caught not seriously completing the questionnaire had to complete the test on the use of SPSS as well to pass the course. In total 588 out of the 635 students who subscribed to the course completed the questionnaire, yielding a response rate of 93%.

STATISTICAL ANALYSIS

In the preparatory analysis subsection, the descriptive statistics are reported of all variables. After checking for outliers, we examined differences between men and women in both means and associations between variables. In the mediation analysis subsection, we tested the hypotheses H1-H7. The mediation analysis was carried out using the methodology of Baron and Kenny (1986). The hypotheses H1-H7 followed exactly the four steps of mediation analysis proposed by these authors. The hypotheses on (partial) mediation (H6 and H7) in step four of Baron and Kenny's recommendations (1986) were tested using the Sobel test (Sobel, 1982). We also report the proportion of the total effect of SC that was mediated by the mood variables. All tests were carried out using regression analysis. We either controlled for gender or, if the association between the variables was different for men and women, we carried out the mediation analysis for men and women separately.

RESULTS

PREPARATORY ANALYSIS

We checked for outliers by regressing each of the four dependent variables (subjective health status, life satisfaction, psychological well-being, and fatigue) on SC, ML, and MM, and then investigated both the Mahalanobis distance and Cook's distance. In each of the four regression analyses, a case was interpreted as an outlier if its Mahalanobis distance was larger than 16.26, which is the 99.9th percentile of a Chi-square distribution with 3 degrees of freedom (Tabachnik & Fidell, 2001, p. 68), or if its Cook's distance was larger than 0.79, which is the 50th percentile of an F distribution with 3 and 585 degrees of freedom (Neter, Kutner, Nachtsheim, & Wasser-

TABLE 1. Means and Standard Deviations (between parentheses) of the Criterion and Predictor Variables

	Total sample (*n* = 588)	Men (*n*=209)	Women (*n* = 379)
Criterion variables			
Subjective health status*	32.35 (4.52)	32.85 (4.48)	32.07 (4.52)
Satisfaction with life	18.54 (2.71)	18.57 (2.89)	18.52 (2.61)
Psychological well-being***	18.87 (2.86)	19.45 (2.82)	18.55 (2.84)
Fatigue	20.67 (4.66)	20.54 (4.34)	20.74 (4.84)
Predictor variables			
Self-concealment*	18.45 (6.51)	19.21 (6.64)	18.02 (6.40)
Mood monitoring***	17.41 (4.90)	16.21 (5.08)	18.07 (4.68)
Mood labeling	22.21 (3.69)	22.41 (3.82)	22.10 (3.61)

Note. Significant results of two-tailed Student´s t tests for testing the mean difference between men and women are shown with an asterix in the first column. *$p < .05$. **$p < .01$. ***$p < .001$.

man, 1996, p. 381). There were no outliers, hence all analyses were conducted using all 588 cases.

The means and standard deviations of all variables are reported in Table 1, for all respondents and for men and women separately. Each variable is the total score on the items belonging to the corresponding scale. On average, men scored significantly higher on subjective health status, psychological well-being, and SC, and lower on MM. All effect sizes ranged from negligible to small (Cohen's *d* equal to .08, .15, .09, .18, respectively; values of Cohen's *d* equal to .2, .5, .8 are interpreted as corresponding to small, medium, and large effects, respectively).

The correlations between the scale scores are reported in Table 2. Except the correlation between the two mood variables, all other correlations were significantly different from zero, and their sign always corresponded to our expectations. The effect sizes ranged from small/medium (*r* = .14, between ML and subjective health status) to large (*r* = –.52, between fatigue and psychological well-being and between fatigue and health status; values of *r* equal to .1, .3, .5 are interpreted as corresponding to small, medium, and large effects, respectively).

Finally, we checked if the effect of SC on MM and ML, and the effects of SC and these mood variables on the four criterion variables, were different for men and women after controlling for gender (re-

TABLE 2. Correlations Between Scales in Total Sample

	SC	MM	ML	Fatigue	Life satisf.	Psych w-b.	Health status
SC		.20***	−.30***	.28***	−.30***	−.32***	−.27***
MM			−.01	.30***	−.24***	−.45***	−.33***
ML				−.26***	.21***	.34***	.14***
Fatigue					−.33***	−.52***	−.52***
Life satisf.						.47***	.28***
Psych w-b.							.49***
Health status							

*$p < .05$. **$p < .01$. ***$p < .001$.

ported p-values refer to two-tailed tests). That is, we tested the interaction effect with gender while also including the main effects of gender. Hence, for each of the arrows in Figure 1, a regression analysis was conducted with gender, the variable from which the arrow originated, and the interaction between these two variables, as predictors. The effects of SC, MM, and ML were different for men and women for only one of the four criterion variables, fatigue. The effects of SC ($t(584) = -2.15$, $p = .032$), MM ($t(584) = 3.18$, p $= .002$), and ML ($t(584) = 2.12$, $p = .034$) on fatigue were stronger for women than for men after controlling for gender. Except for the effect of ML on psychological well-being that was larger for women ($t(584) = 2.44$, $p = .015$), the effects of each of the three predictors (SC, MM, ML) on each of the remaining three criterion variables (i.e., life satisfaction, psychological well-being, and subjective health status; see Figure 1) were not different for men and women. Thus, we concluded that only for fatigue the mediation analyses needed to be carried out separately for men and women. For the other three criterion variables the data of men and women were pooled to increase the statistical power of the mediation analysis. In all analyses we controlled for gender.

MEDIATION ANALYSES

The first step was to test H1 that there was an effect of SC on each of the four criterion variables after controlling for gender. These effects are shown in Figure 2 as the numbers between parentheses on the arrows of SC to each of the criterion variables. Because our
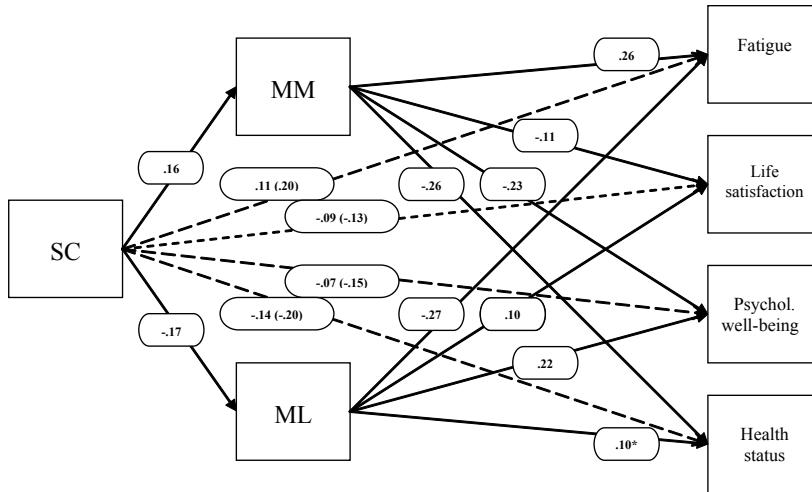
FIGURE 2. Estimated path model showing that the relation between self-concealment and subjective well-being is mediated by mood monitoring and mood labeling.
Note. SC = Self-concealment, MM = Mood Monitoring, and ML = Mood Labeling. All *p*-values <.001, unless indicated otherwise. *p < .05.

hypotheses were directional, the *p*-values of the tests and all other tests in this subsection are one-tailed. The effects, expressed as un-standardized coefficients, of SC on fatigue (.20, $t(585)$ = 7.02 , p < .001), life satisfaction (–.13, $t(585)$ = –7.71 , p < .001), psychological well-being (–.15, $t(585)$ = –8.38 , p < .001), and subjective health status (–.20, $t(585)$ = –7.06, p < .001) were all significant, confirming H1. The nearly medium effect sizes (Cohen's f^2) were .13, .10, .09, .09, respectively.[1] The effect of SC on fatigue was .12 for men ($t(207)$ = 2.73, p = 0.003, r = .19) and .25 for women ($t(377)$ = 6.71, p < .001, r = .327) (also medium effect sizes; results not shown in Figure 2). Thus, all results support H1 that SC is negatively associated with subjective well-being and positively associated with fatigue.

In the second step, we tested H2 and H3 that SC has an effect on the two mood variables after controlling for gender. The effects on MM (.16, $t(585)$ = 5.43, p < .001, f^2 = .048) and ML (–.17, $t(585)$ = –7.61, p < .001, f^2 = .092) were significant, and of small and medium size,

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1. Values of Cohen's f^2 equal to .01, .15, .35 are interpreted as small, medium, large effects, respectively (Cohen, 1988). Cohen's f^2 is considered as the appropriate measure of effect size in hierarchical regression analysis. In hierarchical regression analysis one assesses the effect of a variable controlled for other independent variables.

respectively. For women, the effects (not shown in Figure 2) of SC on MM (.15, $t(377) = 3.97$, $p < .001$, $r = .200$) and ML (–.20, $t(377) =$ –6.71, $p < .001$, $r = .348$) were significant and of small and medium size, respectively. For men, these effects (not shown in Figure 2) were .19 ($t(207) = 3.72$, $p < .001$, $r = .250$) and –.13 ($t(207) = –3.25$, $p <$ .001, $r = .221$), respectively, and both were of medium size. The gender-specific effects of SC on the mood variables were needed below for carrying out mediation analyses on fatigue for men and women separately. To conclude, these results also support H2 and H3 that SC is positively related to MM and negatively related to ML.

In the third step we tested H4 and H5 that each mood variable has an effect on each of the four criterion variables, after controlling for gender, SC, and the remaining mood variable. Both hypotheses were confirmed. The separate effect of MM on fatigue was .26 ($t(583) = 6.82$, $p < .001$, $f^2 = .079$), on life satisfaction –.11 ($t(583) =$ –4.95, $p < .001$, $f^2 = .042$), on psychological well-being –.23 ($t(583) =$ –11.22, $p < .001$, $f^2 = .213$), and on subjective health status –.26 ($t(583)$ $= –7.05$, $p < .001$, $f^2 = .086$) (also, see Figure 2). The separate effect of ML on fatigue was – .27 ($t(583) = –5.35$, $p < .001$, $f^2 = .049$), on life satisfaction .10 ($t(583) = 3.51$, $p < .001$, $f^2 = .021$), on psychological well-being .22 ($t(583) = 8.02$, $p < .001$, $f^2 = .109$), and on subjective health status .10 ($t(583) = 1.97$, $p = .025$, $f^2 = .007$) (also, see Figure 2). Except for a small effect size for ML on subjective health status, and for a medium to large effect size for MM on psychological well-being, the effect sizes were small to medium. Note that the effect sizes of MM on each criterion variable were larger than the corresponding effect sizes of ML. Finally, for women the effects of MM and ML on fatigue were .34 ($t(375) = 7.31$, $p < .001$, $f^2 = .142$) and –.32 ($t(375) = –5.05$, p $< .001$, $f^2 = .069$), respectively, and for men the corresponding effects were .12 ($t(205) = 1.95$, $p = .026$, $f^2 = .019$) and –.16 ($t(205) = –2.08$, $p =$ .019, $f^2 = .021$), respectively.

To summarize, H1 to H5 were confirmed; SC was negatively associated with subjective well-being (H1), SC was associated with the mood awareness variables (H2 and H3), and the mood awareness variables were associated with subjective well-being (H4 and H5) after controlling for SC. Since all three first steps of the mediation analysis were successfully taken, we carried out the last step and tested H6 and H7 that the effect of SC on well-being was at least partly mediated by the mood awareness variables. Both hypotheses were confirmed by the results of the Sobel tests (Table 3). The second and fourth columns of Table 3 present the proportions of the

TABLE 3. Results of Sobel Tests and Proportions of Total Effects SC on Criterion Variables Mediated by Mood Variables

Effect	Sobel *z (p)* for labeling	Proportion mediated by labeling	Sobel *z (p)* for monitoring	Proportion mediated by monitoring
Life satisfaction	–3.18***	0.14	–3.66***	0.14
Psychological well-being	–5.54***	0.26	–4.89***	0.25
Health status	–1.92*	0.08	–4.66***	0.22
Fatigue	4.38***	0.23	4.27***	0.21
-Fatigue men	1.72*	0.18	1.72*	0.17
-Fatigue women	4.13***	0.26	3.48***	0.20

*$p < .05$. **$p < .01$. ***$p < .001$

total effect of SC that were mediated by each of the mood variables. These proportions were obtained by dividing the indirect effect of SC (product of numbers on arrows from SC to MM and ML, and from MM and ML to the criterion variable in Figure 2) by the total effect of SC (number between parentheses from SC to criterion variable). The sum of these proportions is equal to the total mediated effect, which equals the direct effect (number on arrow of SC to criterion variable) divided by the total effect of SC (number between parentheses on this same arrow).

The proportion of the total effect of SC that was explained by the mood variables was lowest for life satisfaction (.28; i.e. .14 + .14; see Table 3) and highest for psychological well-being (.51 = .26 + .25). Both mood variables mediated the effect of SC to a similar extent, except for subjective health status. However, SC had a lower effect on MM than on ML, but MM had a larger effect on the criterion variables than ML, resulting in an approximately equal product or mediated effect on fatigue, life satisfaction, and psychological well-being. Finally, we note that the effects of SC were partly mediated, since the direct effect of SC on the criterion variables after controlling for the mood variables was still significant. These direct effects were .11 on fatigue ($t(583) = 3.89$, $p < .001$, $f^2 = 0.03$), –.09 on life satisfaction ($t(583) = –5.29$, $p < .001$, $f^2 = .05$), –.07 on psychological well-being ($t(583) = –4.56$, $p < .001$, $f^2 = .04$), and –.14 on subjective health status ($t(583) = –4.78$, $p < .001$, $f^2 = .04$). For women, the direct effect of SC on fatigue was .13 ($t(375) = 3.63$, $p < .001$, $f^2 = 0.04$), and for men it was .08 ($t(205) = 1.68$, $p = .047$, $f^2 = 0.01$). Note that all di-

rect effect sizes were small after controlling for the mood variables and gender.

DISCUSSION

The first aim of this paper was to replicate earlier findings that SC is negatively related to subjective well-being. These findings indeed were replicated. For both men and women, we consistently found significant moderate negative correlations between SC and life satisfaction, psychological well-being, and subjective health status and significant moderate positive correlations with fatigue.

The second aim of this paper was to empirically examine the relation between SC and MM, and between SC and ML. This relationship was not investigated previously. As hypothesized, a significant positive correlation between SC and MM was found. This suggests that secretive persons are more likely to scrutinize their mood states, which are predominantly negatively valenced due to the negative content of the self-concealed information. One possible explanation for this finding is that SC induces the use of an inward-directed coping strategy rather than an outward-directed coping strategy such as asking a confidant advice on one's own mood state. This explanation is consistent with previous research. Cepeda-Benito and Short (1998) found SC to be negatively associated with attitudes toward counseling and the tendency to seek counseling. Further, Kelly and Achter (1995) found that self-concealers have negative attitudes toward counseling when it was emphasized that the client had to disclose personal information during counseling.

Keeping the distressing self-concealed information to oneself may lead to ruminative behaviors (Evans et al., 1999; Nolen-Hoeksema, 1991) and to repeatedly experiencing the accompanying mood states. To avoid attracting the attention and unwanted help of supporting others (which would imply the need of disclosure of the information), both the distressing information and the accompanying mood states must be suppressed (Lane & Wegner, 1995). However, suppressing this information and these mood states causes them to become easily accessible and even more present in the awareness of the individual. Consequently, as predicted by Wegner's ironic cognitive processes (1992; 1994), the self-concealer may become immersed in these mood states. This suggests that, although Lane and Wegner's (1995) preoccupation model of secrecy primarily relates

to secrecy rather than to SC, our results encourage the further investigation of the extent to which the model may also hold for SC.

Also consistent with our hypothesis, we found a negative association between SC and ML. Thus, the more secretive a person, the less well (s)he is able to adequately label his or her mood states. This may be due to SC preventing the development of adaptive coping skills such as learning from feedback from others (Kawamura & Frost, 2004). Due to the absence of such coping skills, a self-concealer has limited access to social support because (s)he may find the price of social support, which implies disclosure of distressing personal information, too high to pay (Cepeda-Benito & Short, 1998). Absence of social support results in fewer opportunities to develop a better understanding of one's mood states. Giuliano (1995) showed that low levels of ML are associated with fewer reported positive thoughts after a negative mood induction and more negative thoughts after a positive mood induction. Hence, self-concealers run the risk of experiencing more negative thoughts and fewer positive thoughts. This may be reinforced by the frequent occurrence of environmental stimuli that remind the self-concealer of the self-concealed information. Finally, lower levels of ML prevent one to counter negative moods with controlled and strategic repair efforts (Giuliano, 1995), rendering it more difficult for the self-concealer to change the negative mood.

It thus appears as if SC predicts double trouble: negatively valenced mood states receive increased and continuous levels of attention, but a better understanding of the nature and cause of these mood states is not attained. The results are a limited deployment of adequate emotion regulatory processes (Cepeda-Benito & Short, 1998), and a longer duration of the negative mood state (Nolen-Hoeksema, 2000).

Interestingly, whereas men scored significantly higher on SC than women, women scored significantly higher on MM than men, yet there was no significant difference on ML. This corroborates earlier findings suggesting that women are more vigilant about their affective states than men (Thomsen, Mehlsen, Viidik, Sommerlund, & Zachariae, 2005), but that they are not necessarily more successful than men labeling these affective states.

The final aim of this paper was to investigate whether the relation between SC and subjective well-being was mediated by MM and/or ML. Both variables indeed partly mediated the relation between SC and the health outcomes; from 28% to 51% of the total relation

was mediated by MM and ML together. This finding is an important step in understanding how SC is negatively related to subjective well-being, and emphasizes the influence of emotion regulatory processes on this relation. The findings suggest that secretive persons may report lower subjective well-being because they focus on their negative mood states without being able to regulate them and change them into more positive moods. These findings are consistent with the finding that negative mood states and ruminative response styles are negatively related to subjective well-being (e.g. Diener, Suh, Lucas, & Smith, 1999; Nolen-Hoeksema, 2000). Important in this maladaptive emotion regulation of self-concealers appears to be the lack of (seeking) social support. Social support has repeatedly been shown to promote subjective well-being by influencing emotions, cognitions and behaviors (Cohen, Gottlieb, & Underwood, 2000; Gallagher & Vella-Brodrick, 2008). Lack of social support for self-concealers thus may be an important element in the negative relation between self-concealment, mood regulation, and subjective well-being.

The findings of our study emphasize the importance of mood states in the relation between SC and subjective well-being, and demonstrate that SC is not only associated with adverse processes at a cognitive level (Evans et al., 1999; King et al., 1992; Swinkels et al., 1996), but also at the level of emotions. Therefore, theories that aim at explaining the relation between SC and subjective well-being should take the tendency to direct attention towards one's moods states into account, and not just the salience of the secret thoughts, ruminative coping styles or more proximal concepts such as the tendency to avoid seeking social support.

One could argue that a third variable, most notably a higher order personality construct such as Neuroticism (N), may explain the relation between SC and subjective well-being. However, Wismeijer and van Assen (2008) report empirical evidence that N does not explain the association between SC and subjective well-being. In two student samples, they found a weak positive association between SC and N, and a negative association between N and indicators of subjective well-being. However, when N (and also Extraversion, the second most important predictor of subjective well-being; Diener, 2000; but see also Vittersø, 2001) was added to the regression model in which SC predicted subjective well-being, the regression coefficient of SC decreased only little, leaving SC to be a significant predictor. This result indicated that N and E explained only a small

part of the association between SC and subjective well-being. We conclude that SC is an independent predictor of subjective well-being. This conclusion merits the attention of researchers who study how inhibition of expression may affect subjective well-being.

SC is an important construct for clinical practice. Patients experiencing negative thoughts about themselves abound in clinical practice, and are liable to conceal these thoughts from others, even from the therapist. Indeed, several studies estimate that between 46% and 65% of long-term psychotherapy clients deliberately left topics undisclosed in therapy (Hill, Thompson, Cogar, & Denman, 1993; Kelly, 1998). Further, Kelly and Achter (1995) suggest that subjects high on SC have a more negative attitude toward counseling because they fear that counseling requires them to disclose personal information. Kelly (1998) and Kelly and Yip (2006) found that when individuals keep a major secret, this may have a positive impact on their subjective well-being, which supports a self-presentational view on secret keeping in counseling. This suggests that therapists should not assume that the disclosure of major secrets by the client, and perhaps also encouraging the self-concealer to self-disclose, invariably leads to positive therapeutic outcomes. Instead, it may be beneficial that therapy addressess the self-concealing client's mood regulation and coping style. For example, the self-concealer may be educated how his or her secretiveness may provoke ruminative thoughts, prolong negative moods, and how being secretive makes it difficult to change these negative moods.

This study has three limitations. First, the relatively homogeneous sample of university students does not allow for generalization to the general population. However, since self-concealment is thought to be a stable and enduring trait, its effects can be expected to be long-term and cumulative (Larson & Chastain, 1990). Therefore, it is likely that the use of a young sample has attenuated rather than inflated the associations. Second, the correlational design of this study does not allow distinguishing cause and effect. Therefore, the results do not allow the definitive conclusion that SC causes psychological and physical discomfort, and one should also investigate the inverse relation and the influence of third variables. However, as SC is a personality trait, it is unlikely that physical symptoms cause SC. Third, the use of self-reported measures of subjective well-being may have introduced response bias to our data, in particular due to gender differences (Sigmon et al., 2005).

To conclude, the results show that SC is associated with maladaptive mood regulation, that is, characterized by scrutinizing one's negative moods without being able to label these moods and adequately act upon them. This inability has a negative effect on subjective well-being. Avoiding seeking social support may play an important role in causing the maladaptive mood regulation. Future research may focus on characteristics of the self-concealer's social network to examine the role social processes play in the relation between SC and subjective well-being. Further, research may more specifically assess thought suppression in combination with SC. Finally, longitudinal studies may establish the predictive value of SC with respect to health problems, focusing on possible underlying physiological mechanisms that may mediate between SC and these health problems.

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