Self-concealment: Integrative review and working model

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An extensive empirical literature has focused on the self-concealment (SC) construct. In this article, we review 137 studies that used the Self-Concealment Scale (SCS) with varied populations (e.g., adolescent; intercultural; international; lesbian, gay, and bisexual; and intimate partner). We propose a working model for the psychology of SC and the mechanisms of action for its effects on well-being. A dual-motive conflict between urges to conceal and reveal is seen to play a central role in these health effects. Meta-analytic techniques identify significant associations for SC with 18 constructs falling into six general categories: antecedents, disclosure and concealment, emotion regulation, social well-being, psychological and physical health, and psychotherapy. We interpret these findings with reference to current research and theory on secret keeping and health as well as emotion- and self-regulatory processes. This first integrative review supports the construct validity of the SCS and demonstrates the value of the SC construct for the study of psychological phenomena in which secret keeping is a recognized issue.

Keywords: self-concealment, secrets, suppression, mindfulness, help seeking
Scholars have long asserted that there is a psychological price to be paid for secret keeping. William James (1902) stated “One would think that in more men the shell of secrecy would have had to open, the pent-in abscess to burst and gain relief,” and James’ contemporary Sigmund Freud and his followers have persistently pursued their patients’ pathogenic secrets (Ellenberger, 1970). Contemporary researchers and theorists continue to investigate how what we conceal and reveal about ourselves affects our well-being. Efforts in these areas are now coalescing into a nascent psychology of secrets, secret keeping, and health. This new psychology, now documented in numerous books and book chapters (Bok, 1983; Caughlin & Vangelisti, 2009; Farber, 2006; Finkenauer, Kubacka, Engels, & Kerkhof, 2009; Imber-Black, 1998; Kelly, 2002; Kelly & Macready, 2009; Pennebaker, 1990, 2011; Petronio, 2000; Smyth, Pennebaker, & Arigo, 2012; Wismeijer, 2011a), draws on work conducted in conceptually-related areas, including expressive writing or experimental disclosure, self-disclosure in therapy, emotion regulation, uncertainty and information management, shame, and stigma. The evolving literature on these issues includes extensive study of self-concealment (SC), which is viewed as an individual difference variable defined as “the predisposition to actively conceal from others personal information that one perceives as distressing or negative” (Larson & Chastain, 1990, p. 440) and measured with the Self-Concealment Scale (SCS).

Jourard’s (1971) work set the stage for the development of the SC construct and the SCS. Best known for documenting the positive health consequences of disclosing important information about the self, Jourard also emphasized negative health consequences of hiding significant aspects of the self, noting that secret keeping goes beyond mere lack of disclosure; it involves an active struggle to avoid becoming known (1971, p. 33). Pennebaker’s investigations of the health effects of revealing, as opposed to not revealing, undisclosed traumas, also prompted the conceptualization and measurement of SC. Pennebaker and colleagues repeatedly found that individuals with undisclosed traumas had poorer health outcomes compared to those who did disclose, and that written emotional disclosure of stressful or traumatic events promoted physical and psychological health and subjective well-being (Smyth et al., 2012). The unwillingness to discuss major upheavals with others was attributed
to either “a general individual difference style or a powerful situational constraint” (Pennebaker, Colder, & Sharp, 1990, p. 530). The possible individual differences in concealment became the focus of early work on the SC construct, ultimately leading to the construction of the SCS.

In the development of the SCS, Larson and Chastain (1990) viewed self-concealed personal information as (a) a subset of private personal information; (b) consciously accessible to the individual, as distinguished from “unconscious secrets” or secrets from oneself resulting from repression or denial; and (c) actively kept from the awareness of others. Thus, SC was conceptualized as involving the conscious concealment of personal information (thoughts, feelings, actions, or events) that is highly intimate and negative in valence, noting that it often applies to painful or traumatic experiences (e.g., childhood abuse, rape, grief, strong negative thoughts about oneself, or unhappiness in relationships, and serious medical conditions).

Initial evidence indicated that (a) SCS is a reliable and essentially unidimensional instrument, (b) SC differs empirically and conceptually from self-disclosure, and (c) SC uniquely contributes to predicting important health outcomes. In Larson and Chastain’s study (1990), SC accounted for significant incremental variance in depression, anxiety, and physical symptoms even after controlling for trauma, trauma distress, trauma disclosure, social support, social network, and self-disclosure.

SELF-CONCEALMENT: A WORKING MODEL

Subsequent theory and research suggest elaborations of the nomological network in which SC is located, including possible antecedents and mechanisms of action to achieve health effects. In our model (see Figure 1), SC manifests most immediately in interpersonal behaviors (secret keeping, reduced openness) and psychological correlates (maladaptive emotion regulation) reflecting the goal of self-protection and the sense of stigma related to self-information. These intra- and interpersonal dynamics lead to negative consequences for both health (mental and physical) and relationships, and they therefore have specific implications for the psychotherapy relationship.
In our model we conceptualize SC as a complex trait-like motivational construct where high levels of SC motivation energize a range of goal-directed behaviors (e.g., keeping secrets, behavioral avoidance, lying) and dysfunctional strategies for the regulation of emotions (e.g., expressive suppression) which serve to conceal negative or distressing personal information. This motivational view of SC accords with recent conceptualizations of both secret keeping and emotional regulation as goal-oriented activities or processes (Caughlin & Vangelisti, 2009; Tamir, Mitchell, & Gross, 2008). We believe that individual differences in the dispositional use of SC strategies are quite consistent over time, yet are also subject to state-like fluctuations over time (Roberts, Donnellan, & Hill, 2013) and across situations.

**ANTECEDENTS**

In our motivational model, we consider traumas, insecure attachment orientations, and dispositional social-evaluative concerns as potential precursors or antecedents of SC. First, the motivation to conceal traumas, stigmatized conditions, and other negative or distressing personal information is a defining feature of SC. Greater frequency or intensity of these experiences may increase SC moti-
vation. Second, individuals with insecure attachment orientations might feel more threatened by disclosing distressing personal information. Thus, they should be more likely to adopt an SC coping strategy. Finally, individuals with the predisposition to be sensitive to others’ evaluations should be more inclined to self-conceal. This group would include shame-prone, and perfectionistic personalities, as well as others who are sensitive to rejection or are inhibited socially and psychologically.

OUTCOMES AND MECHANISMS OF ACTION

Self-Concealment can affect health primarily through secret-keeping behaviors and maladaptive emotion regulation processes. We hypothesize that high levels of SC increase both secret keeping and dysfunctional emotion regulation processes. These, in turn, affect health through direct and indirect pathways, including inauthentic behaviors and reduced social well-being. In our model, these mechanisms are energized by a conflict between urges to conceal, and reveal—a dual-motive conflict which eventually leads to adverse physiological effects and a breakdown of self-regulatory resources (Baumeister & Vohs, 2007). More distal negative health effects could result from limited access to both formal and informal sources of support and assistance.

AIMS FOR THIS REVIEW

This article has three aims: (1) to review research using the SCS and provide the first summary of this work with evidence for construct validity and our working model; (2) to derive summary correlations between the SCS and the other constructs in the model using standard meta-analytic techniques; and (3) to consider the current state of support for the model and discuss its implications for theory and future research.

METHOD

A search of the EBSCO, Eric, MEDLINE, Google Scholar, and PsychINFO databases using the search terms self-concealment,
Self-Concealment Scale, SCS, and Larson and Chastain yielded 128 publications\(^1\) with 137 separate studies, using the SCS administered to over 40,000 research participants. The review of these studies revealed that 18 constructs accounted for the majority of reported correlations with SC (insecure attachment, trauma incidence, social-evaluative concerns, disclosure, secret keeping, authenticity/openness, suppression, mindfulness/psychological flexibility, social support, romantic relationship health, depression, anxiety, distress, physical symptoms, mental health, negative health behaviors, help-seeking attitudes, and therapy process/outcomes).

We used meta-analytic techniques to evaluate the empirical findings reported in 92 studies for these constructs.\(^2\) We first aggregated correlations for a given construct derived from the same sample using methods recommended by Hunter and Schmidt (2004). Each sample contributed to the meta-analysis with a single effect size, thereby avoiding violations of the assumption of statistical dependence of the effect sizes. We then converted Pearson’s \(r\) for each study to Fisher’s \(z’\), as recommended by Borenstein, Hedges, Higgins, and Rothstein (2009). We then converted the weighted mean \(z’\) score, and its 95% confidence interval, back to \(r_s\), which we report here. We conducted the analyses using the ‘MAc’ package (Del Re & Hoyt, 2012) written in the open-source R environment (R Core Team, 2013).

Although our focus here is the magnitude of association with critical constructs, we note that the homogeneity (\(Q\)) test was statistically significant (\(p < .05\)) for 12 of the 18 constructs. A significant \(Q\) statistic indicates greater variability among study-level effect sizes than one would expect by chance (i.e., sampling error) alone. This may reflect systematic variability attributable to between-study differences, such as features of the sample or characteristics of the measures (i.e., reliability, construct validity). We did not conduct moderator tests, but between-study heterogeneity is reflected in wider confidence intervals for the associated summary effect size (longer whiskers in Figure 2).

This analysis yielded summary effect sizes for the 18 SC-related constructs grouped into six general categories (antecedents, disclosure and concealment, emotion regulation, social well-being, psychological and physical health, and psychotherapy). Appendix B presents details of the individual studies.

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1. SCS publications presented in Appendix A.
2. Meta-analytic studies, correlations, alphas, and measures presented in Appendix B.
RESULTS

SCS: EVIDENCE FOR VALIDITY

Psychometric Properties
Extensive research confirms the initial findings supporting the reliability and unidimensionality of the SCS (Larson & Chastain, 1990). Ninety-nine studies reported coefficient alphas for the SCS, yielding an overall mean of .87. The scale demonstrates good test-retest reliability (.74, Cramer & Barry, 1999; .81, Larson & Chastain, 1990). Cramer and Barry’s (1999) extensive study of the psychometric properties of the SCS showed that a unidimensional solution was the most “comprehensive, efficient, and parsimonious” (p. 636).
Construct Validity
A correlational profile supported good convergent, discriminant, and construct validity of the SCS, with SCS scores relating to distinct constructs that are theoretically associated in predicted fashion (Hoyt, Warbasse, & Chu, 2006).

Convergent Validity. As hypothesized, the meta-analytic results indicated a negative association between SC and disclosure (DIS) \( r_+ = -.36, 95\% \text{ CI } [-.43, -.30] \) and between SC and authenticity/openness (A/O) \( r_+ = -.47 [-.52, -.43] \), and there was a positive association between SC and secret keeping (SK) \( r_+ = .35 [.28, .41] \).

Discriminant Validity. It is especially important to examine whether SC is empirically and conceptually distinct from self-disclosure. Initial cross-validated factor analyses (Larson & Chastain, 1990) established that SC is separate and distinct from self-disclosure. The studies reviewed here (Kahn & Hessling, 2001; Kjellander, 1995; Larson & Chastain, 1990; Lumley, Kelley, & Leisen, 1997) reported a mean correlation of -.29 for the SCS with the Self-Disclosure Index. Moreover, the moderate intercorrelations (e.g., mean \( r = -.37; \) Agyemang, 2007; Kahn & Hessling, 2001; Kahn, Lamb, Champion, Eberle, & Schoen, 2002; Uysal, Lin, & Knee, 2010) obtained with the Distress Disclosure Index (DDI; Kahn & Hessling, 2001), and the finding that SC has direct effects on well-being, as well as indirect effects via need satisfaction independent of distress disclosure, indicated that “self-concealment is distinct from self-disclosure even when disclosure is restricted to distress” (Uysal et al., 2010, p. 191). Finally, SC was conceptually and empirically distinct from repressive style (Garssen, 2007). It had good discriminant validity with regard to self-monitoring and social desirability motivation, and its health effects did not result from shared variance with a negative affect dimension (trait neuroticism; Wismeijer & van Assen, 2008).

Summary
The SCS demonstrated excellent psychometric properties supporting its unidimensionality, reliability, and construct validity. Scores on the SCS reflect a motivation to conceal aspects of the self that is conceptually and empirically distinct from reported disclosure. We now turn to a more detailed examination of the location of SC within the nomological net of related constructs as shown in Figure 1.
SC-RELATED CONSTRUCTS: EVIDENCE FOR WORKING MODEL

**Antecedents**

Although no longitudinal data are available, preliminary findings from cross-sectional investigations revealed links between SC levels and insecure attachment, trauma incidence, and social-evaluative concerns (see Figure 2).

*Insecure Attachments and Trauma Incidence.* Meta-analytic results revealed moderate to strong associations between SC and both insecure attachment (IA) ($r_+ = .41 [.36, .45]$) and trauma incidence (TI) ($r_+ = .31 [.10, .48]$). For example, SC is significantly associated with memories of childhood threat, mediates the relation between memories of childhood threat and paranoid ideation (Murphy, Shevlin, Adamson, Cruddas, & Houston, 2012), and is strongly related to negative early life experiences (e.g., childhood trauma, feeling unvalued, threatened) (Cruddas, Gilbert, & McEwan, 2012; Peltan, 2012).

*Social-Evaluative Concerns.* Our working model proposes that individuals who are greatly concerned with social evaluation—persons whom Marin and Miller (2013) categorized as interpersonally sensitive—would be more inclined to be high self-concealers. Empirical findings support this hypothesis, revealing moderate to strong positive associations between SC and social-evaluative concerns constructs (SEC) ($r_+ = .41 [.32, .49]$), including fear of negative evaluation (DiBartolo, Li, & Frost, 2008), social reticence (Ichiyama et al., 1993), loss of face concerns (Zayco, 2008), and perfectionism (DeRosa, 2000; Hewitt et al., 2003; Leventhal, 2009). SC also appears to mediate the relationship between perfectionism and distress (Brunell et al., 2010; DiBartolo et al., 2008; Kawamura & Frost, 2004).

**Disclosure and Concealment**

As noted above in our discussion of convergent validity for the SCS, SC has consistently demonstrated negative associations with behaviors associated with authenticity/openness (A/O) ($r_+ = -.47 [-.52, -.43]$) and disclosure (DIS) ($r_+ = -.36, 95\% \text{ CI} [-.43, -.30]$), and positive associations with secret keeping (SK) ($r_+ = .35 [.28, .41]$). High self-concealers are less likely to risk an intimate disclosure (Lopez & Rice, 2006), more likely to keep therapy-relevant secrets from their
therapists (Fedde, 2010) and more likely to keep life events secret in general (Larson & Chastain, 1990).

**Emotion Regulation**

Theorists often conceptualize SC within an emotion regulation framework; for example, as reflecting “maladaptive and control-based emotion and behavior regulation” (Masuda, Anderson, & Edmonds, 2012), “maladaptive control-and avoidance-focused emotion/behavior regulation” (Edmonds, Masuda, & Tully, 2013), “maladaptive socio-emotional regulation” (Wismeijer, 2011b), or other inhibition-related emotion regulation constructs that fall under the general rubric of suppression (Pennebaker & Beall, 1986; Wegner, Lane, & Pennebaker, 1995).

**Suppression.** SC associated strongly with suppression-related constructs (SUP) ($r = .52$ [.43, .61]). SC positively related to ambivalence concerning emotional expressiveness (Barr, Kahn, & Schneider, 2008; King, Emmons, & Woodley, 1992; Lumley et al., 1997), suppression of emotional expression (Üysal & Lu, 2011), self-silencing (Cramer, Gallant, & Langlois, 2005; Reyome, Ward, & Witkiewitz, 2010), fear of disclosure (Cruddas et al., 2012; Murphy et al., 2012), emotional control (King et al., 1992; Zayco, 2008), suppressive coping (Lopez, Mitchell, & Gormley, 2002), concealment motivation (Mohr & Kendra, 2011), behavioral inhibition (Ornstein, 2009), and hiding and rejecting the self (Rodebaugh, 2009).

The significant correlation ($r = .44$; Üysal & Lu, 2011) between the SCS and the suppression subscale of the Emotional Regulation Questionnaire (ERQ; Gross & John, 2003) links the high self-concealer with the emerging health profile for the emotionally suppressive person. Emotional inhibition is linked to increased sympathetic activation of the cardiovascular system (Gross & Levenson, 1993); more rumination, less positive affect, and more depressive symptoms (Gross & John, 2003; John & Gross, 2004); and higher levels of inflammation, a biological state associated with stress and coronary heart disease (Appleton, Buka, Loucks, Gilman, & Kubzansky, 2013).

**Mindfulness/Psychological Flexibility.** SC has negative associations with healthy emotion-regulation strategies such as mindfulness and psychological flexibility (M/PF) ($r = -.39$ [-.42, -.36]). Masuda, Anderson, and Sheehan (2009) speculated that the negative outcomes
associated with SC occur because secret keeping relates closely to psychological inflexibility or lack of mindfulness. Momentary anxiety reduction negatively reinforces attempts at “downregulating, fixing, avoiding, controlling, or suppressing unwanted private experiences (e.g., negative feelings, judgmental thoughts, and personal secrets)” (p. 117), but these lead to long-term negative health outcomes.

**Social Well-Being**

The health effects of SC extend to the social realm. A growing body of research examines the relation between SC and social well-being as reflected in social support levels and romantic relationship health.

*Social Support.* The effect size for social support was negative and moderately strong (SS) ($r = -0.39 [-0.45, -0.33]$). These findings are consistent with both the initial findings ($r = -0.35, and -0.34$; Larson & Chastain, 1990) and our working model.

*Romantic Relationship Health.* In the original SC article Larson and Chastain (1990) encouraged research on the role of SC in the development and dissolution of intimate relationships. Our analysis of subsequent research confirms that SC is strongly and negatively associated with health and well-being in close romantic relationships (RRH) ($r = -0.50 [-0.62, -0.36]$). For example, in-depth studies of SC in romantic relationships by Uysal and colleagues (Uysal, Lin, Knee, & Bush, 2012; see also Wickham & Knee, 2013) revealed significant negative effects on relationship well-being. Other findings indicated that SC mediates the relationship between symptoms of posttraumatic stress disorder (PTSD) and romantic relationship health (Perrier, 2011), and that SC is linked to diminished marital satisfaction (Finkenauer & Hazam, 2000), reduced trust, and increased marital conflict over time (Finkenauer, Kerkhof, Righetti, & Branje, 2009).

**Psychological and Physical Health**

Our working model hypothesizes that, consistent with initial findings (Larson & Chastain, 1990), SC is strongly associated with negative health outcomes. Our analyses included 108 independent correlations with measures of poor well-being, including depression, anxiety, distress, physical symptoms, various indices of mental health, and negative health behaviors.
Meta-analytically derived correlations demonstrated a strong link between SC and impaired health and well-being. Moderate to strong effect sizes were obtained for depression (DEP) ($r = .40 \ [.37, .43]$), anxiety (ANX) ($r = .38 \ [.33, .43]$), distress (DST) ($r = .38 \ [.33, .43]$), physical symptoms (PS) ($r = .29 \ [.24, .33]$), indices of mental health (MH) ($r = -.42 \ [-.47, -.37]$), and negative health behaviors (NHB) ($r = .28 \ [.17, .38]$). Significant effects of SC were found for self-reported suicidal behaviors (Friedlander, Nazem, Fiske, Nadorff, & Smith, 2012), disordered eating cognitions and symptoms (Frank, 2003; Masuda, Boone, & Timko, 2011; Masuda & Latzman, 2012); early onset of smoking (Engels, Finkenauer, Kerr, & Stattin, 2005), affective symptomatology in genital herpes and arthritis patients (Dibble & Swanson, 2000; Lumley et al., 1997), cardiovascular reactivity (Finney, 2002; Vogele & Steptoe, 1992), and pain (Uysal & Lu, 2011).

Psychotherapy
Larson and Chastain (1990) hypothesized that concealing distressing personal experiences would exclude important kinds of social support and assistance, and that these lowered support levels would lead to negative health outcomes. Our meta-analytic results showed significant associations between SC and psychotherapy-related variables, including help-seeking attitudes (HSA) ($r = -.29 \ [-.36, -.22]$) and psychotherapy process and outcome (TP/O) ($r = -.36 \ [-.49, -.22]$).

Help-Seeking Attitudes. This review showed that SC, as originally hypothesized, can play a significant role in the help-seeking process. SC consistently demonstrated a negative relationship with attitudes toward counseling. A comprehensive meta-analysis of 19 studies by Nam et al. (2013) yielded a significant and negative relationship between SC and attitudes toward seeking professional psychological help (HSA). Both direct and indirect effects on attitudes toward help seeking, and the intent to seek help, are reported. Cramer (1999) used a two-tiered model to explain the complexity of self-concealers’ decisions to seek help. High self-concealers, in accordance with Stile’s (1987), fever model, are more likely to seek professional help because of greater distress. However, SC also increases negative attitudes toward counseling that inhibit help-seeking behavior. Thus, “self-concealers find themselves caught in an approach-avoidance conflict involving a skeptical attitude to-
ward counseling that inhibits help seeking for distressing personal problems largely undisclosed to others” (Cramer, 1999, p. 385). This interpretation is consistent with the dual-motive conflict proposed here. Several researchers have tested and extended Cramer’s model for the relation between SC and help seeking (Leech, 2007; Liao, Rounds, & Klein, 2005; Morgan, Ness, & Robinson, 2003; Vogel & Armstrong, 2010).

Therapy Process/Outcomes. Several studies have explored the effect of SC on the therapeutic alliance, in-session client behavior, and various outcomes, like client satisfaction and change. SC had a negative association with both therapeutic working alliance (Fedde, 2009; Swatta, 2006), and a positive relation with keeping therapy-relevant secrets (Fedde, 2009). Findings from three studies demonstrated that psychotherapeutic interventions may modify and decrease SC (Brown & Heimberg, 2001; Luoma, Kohlenberg, Hayes, Bunting, & Rye, 2008; Wild, 2004). Decreased SC also decreased social anxiety and dysphoria (Brown & Heimberg, 2001) and distress (Wild, 2004).

MECHANISMS OF ACTION

What mechanisms of action explain the consistent and robust findings of an association between SC and such a wide range of negative health outcomes? In our working model, high levels of SC motivation lead to secret-keeping behaviors, and to an interrelated set, or constellation, of dysfunctional emotion regulation strategies (e.g., suppression of emotional expression, low levels of mindfulness and psychological flexibility). These, in turn, have direct and indirect effects on health, with pathways including inauthenticity, low social well-being, and negative help-seeking attitudes.

Converging lines of research and theory suggest that the key is a dual-motive conflict between the urges to reveal and to conceal. The influence should be greatest when the levels of both distress and SC are highest, and the corresponding motives to conceal and reveal are maximally conflicting (see Figure 3). Multiple studies on inhibition, emotion regulation, and self-regulation have identified this motivational conflict. Hagemann, Levenson, and Gross (2006) suggested that the physiologically taxing increase in sympathetic activation, which results from emotional suppression, stems from
a “counterpoising of attempts to inhibit expression against strong impulses to express” (p. 105). Pennebaker (1985) argued that, for a behavioral inhibition process to occur, “the individual must actively desire to talk with someone about the event but does not do so (thereby exerting some degree of self-control)” (p. 89). King and Emmons (1990) distinguished between “comfortable inexpressiveness” and “inhibition,” (p. 865) and asserted that we must understand the potential pathogenicity of an individual’s style of emotion regulation in terms of the goals regarding emotional expressiveness: it is ambivalence about one’s emotional expressiveness style (not the mere lack of emotional expressiveness) that leads to ill-being. Kennedy-Moore and Watson (2001) similarly concluded that non-expression is not pathogenic in itself; rather, “the combination of nonexpression plus a desire to express...causes health difficulties” (p. 190). Finally, Baumeister and Vohs (2007) viewed the breakdown of self-regulatory capacity as a result of ego depletion, depletion which reflects “the degree of struggle” (p. 122) between “urges and restraints” (i.e., conflicting motivations) (p. 115). The researchers identified essentially the same dual-motive conflict that we propose here as a core pathogenic process.

SC motivation represents one side of this dual-motive conflict between the predisposition to conceal and the urge to reveal. The
natural human inclination or motivation to disclose distressing experiences propels the other side of the conflict (MacReady, Cheung, Kelly, & Wang, 2011; Sloan, 2010; Stiles, 1987). Rimé (2007) saw the benefits that accrue from this social sharing of emotions as resulting from enhanced interpersonal emotion regulation. Without these adaptive interpersonal emotion regulation processes, nothing regulates negative emotions, appraisals stay unchanged, and responses to the eliciting material remain the same.

According to our working model and the evidence supporting it, multiple maladaptive behavior and emotion regulation processes contribute to the health effects of SC. A struggle between whether to conceal or reveal activates and directs these maladaptive behaviors and emotion regulation processes. Caught in the dual-motive conflict, the high self-concealer struggles with negative thoughts and emotions and uses suppressive and other avoidance-based coping strategies. Short-term reductions in anxiety reinforce these dysfunctional self-protective processes, which can lead to long-term chronic stress and a decreased capacity to self-regulate.

The SC literature has questioned whether secret keeping, per se, is harmful, and whether the health effects of SC can be the result of an inhibited personality dimension common to all high self-concealers (Kelly, 1998, 2002; Kelly & Yip, 2006). Our review and working model of SC lead us to the view that secret keeping is not intrinsically toxic, but becomes so when it involves maladaptive emotion regulation and the behavioral avoidance processes associated with SC (Masuda et al., 2011). Concerning the inhibited personality hypothesis, we see SC as an independent construct associated with social anxiety, rather than a generalized disposition to inhibit behavior and avoid communication, while acknowledging that these traits could play some role as temperamental precursors of SC.

**DISCUSSION**

This article built an empirical working model of SC, based upon a review of both research and theory. Our review supports the initial central hypotheses and findings concerning SC (Larson & Chastain, 1990): that it reliably covaries with negative moods, physical symptoms, low levels of social support, keeping distressing secrets,
ambivalent attitudes toward help seeking, and difficulties in close relationships. We conceptualized SC as a trait-like motivational construct, in which self-concealing behaviors, and a patterned set of dysfunctional strategies to regulate the emotions, both serve the motive to self-conceal. These behaviors and strategies prevent the high self-concealer from effectively regulating emotional distress and integrating difficult life experiences. Thus, while SC increases distress, it also prevents any adaptive resolution of concealed traumas, stigmatized conditions, and other distressing experiences.

The core of our SC motivational model is that pathological outcomes tend to occur when the desire to gain social support, and to reduce distress through disclosure, conflicts with the motivation to conceal, and with the anticipation of shame and vulnerability. This chronic dual-motive conflict energizes the health-injurious processes and behaviors associated with SC, which leads to ego depletion and a breakdown of healthy self-regulation. The health consequences of this conflict can also extend to distal outcomes associated with negative health behaviors, and to a failure to secure professional assistance.

IMPLICATIONS AND FUTURE DIRECTIONS

Future research can investigate the validity of this working model, examine how SC produces negative health effects, and test predictions based on our dual-motive conflict theory. Longitudinal studies may reveal whether SC levels change throughout the lifespan, particularly in response to negative life events or varying social constraints. Other constructs such as thought suppression, rumination, shame, stigma, and the thwarting of basic psychological needs, could play important roles in the development and pathogenicity of SC motivation. First, Wegner and his colleagues examined thought suppression extensively in the context of secrecy and secret keeping (Gold & Wegner, 1995; Smart & Wegner, 2000). Although the SC literature does not yet correlate any specific measures of thought suppression, it is a likely a central feature of secret keeping, and so should figure significantly in SC processes. Wegner et al. (1995) argued that secrecy and thought suppression play an important role in diverse psychopathological conditions. We believe that SC
and SC-related processes and behaviors contribute to the development and maintenance of a broad spectrum of disorders, and in that sense, are transdiagnostic. Second, rumination, a concomitant of thought suppression (Gold & Wegner, 1995) and a transdiagnostic factor in depression, anxiety, and other disorders (McLaughlin & Nolen-Hoeksema, 2011), also very likely plays a major role. A link between SC and ruminative processes was obtained by King and colleagues (1992). Third, the social-cognitive features of stigma and shame should amplify SC motivation. In our review, SC correlated with stigma tolerance, stigma associated with help seeking, and perceived stigma of addiction. Shame may also be an active component in SC processes and outcomes. Shame is independently linked to various psychological symptoms and immunological impairments (Dickerson, Gruenewald, & Kemeny, 2004), and its basic action tendency—to conceal undesirable aspects of the self from the social view—aligns closely with SC motivation. Lastly, Self-Determination Theory (SDT; Deci & Ryan, 2012), with its focus on the role of unfulfilled psychological needs, supplies the basis for a recent addition to proposed mechanisms of action for SC (Uysal et al., 2010; Uysal et al., 2012). Social constraints (Lepore & Revenson, 2007) and self-perception dynamics (Bem, 1967) can also be added to this growing list of SC-related phenomena that await future study.

Although outside the scope of the current review, it is important to note that SC has been a focus of study in several special populations, including differing cultural groups, adolescents, and LGBT persons. Although it is too early to draw any solid conclusions from intercultural studies, researchers note the relevance of SC for Asian culture and psychology (e.g., Masuda & Boone, 2011), and the possibility that SC may be less injurious in certain cultural groups (Constantine, Okazaki, & Utsey, 2004). Studies with adolescents suggest that, although there is some evidence that self-concealment from parents supports autonomy and independence, the weight of evidence show that it poses a substantial risk to adolescent well-being (e.g., Beyers, Goossens, Vansant, & Moors, 2003; Finkenauer, Engels, & Meeus, 2002). Finally, initial findings (e.g., Mohr & Kendra, 2011; Pachankis & Goldfried, 2010; Potoczniak, Aldea, & DeBlaere, 2007) suggest a valuable role for SC in the study of LGBT persons and others with concealable stigmatized identities.
CONCLUSION

The existing SC research has significantly advanced our understanding of the construct. Investigators across a wide spectrum of research areas and populations are recognizing the relevance of SC to their work. The SC construct appears to capture a core psychological phenomenon, and fulfill earlier predictions, making it an important addition to research on personality and health. Our hope is that this review and the working model presented here can guide future studies and contribute to continuing progress in this area.

REFERENCES


APPENDIX A. SCS PUBLICATIONS


Note. (*) Studies contributing meta-analytic data
<table>
<thead>
<tr>
<th>Study</th>
<th>Sample #</th>
<th>Category</th>
<th>Construct</th>
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<td>Cruddas, S., Gilbert, P., &amp; McEwan, K. (2012). The relationship between self-concealment and disclosure, early experiences, attachment, and social comparison. <em>International Journal of Cognitive Therapy, 5</em>(1), 28-37.</td>
<td>8</td>
<td>Antecedent</td>
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<td>0.90</td>
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<td>DeRosa, T. D. (2000). <em>Personality, help-seeking attitudes, and depression in adolescents</em> (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. NQ49894)</td>
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ATSPPH: Attitudes Toward Seeking Professional Psychological Help Scale-Japanese Translation


Emotion Regulation

- **Suppression 0.40**
- **Suppression 0.51**
- **Suppression 0.77**
- **Suppression 0.28**
- **Suppression 0.24**
- **Suppression 0.46**
- **Suppression 0.24**
- **Suppression 0.28**
- **Suppression 0.44**

**LGBIS; Lesbian, Gay, and Bisexual Identity Scale (Mohr & Kendra, 2011)**

**ITQ; Interpersonal Trust Questionnaire (Forbes & Roger, 1999)**

**BIS; Behavioral Inhibition Scale (Carver & White, 1994)**

**STSS; The Self-Silencing Scale (Jack & Dill, 1992)**

**CES; Core Extrusion Schema (Rodebaugh, 2009)**

**ERQ; Emotion Regulation Scale (Gross & John, 2003)**

**Suppressive Coping Subscale**


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65 Social Well-Being Romantic Relationship Health -0.53 0.92 SPS; Social Provisions Scale (Cutrona & Russell, 1987)

65 Social Well-Being Romantic Relationship Health -0.51 0.92 PAIR; Personal Assessment of Intimacy in Relationships (Schaefer & Olson, 1981); Males, Intimacy

65 Social Well-Being Romantic Relationship Health -0.51 0.92 Sternberg Triangular Love Scale (Sternberg, 1997); Males, Total

65 Social Well-Being Romantic Relationship Health -0.51 0.92 PAIR; Personal Assessment of Intimacy in Relationships (Schaefer & Olson, 1981); Males, Engagement

65 Social Well-Being Romantic Relationship Health -0.45 0.92 Sternberg Triangular Love Scale (Sternberg, 1997); Males, Intimacy

65 Social Well-Being Romantic Relationship Health -0.44 0.92 Sternberg Triangular Love Scale (Sternberg, 1997); Males, Commitment

65 Social Well-Being Romantic Relationship Health -0.53 0.92 Sternberg Triangular Love Scale (Sternberg, 1997); Males, Passion

65 Social Well-Being Romantic Relationship Health -0.45 0.92 RAS; Relationship Assessment Scale (Hendrick, 1988); Males
| Perrier, C. P. K. (2011). Posttraumatic stress disorder symptoms might be destroying your intimacy: A test of mediational models in a community sample of couples (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. NR68167) | 66 | Social Well-Being | Romantic Relationship Health | -0.33 | 0.89 | RAS; Relationship Assessment Scale (Hendrick, 1988); Females |


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76 Psychological & Physical Health Distress 0.50 0.94 IRI-PD; Interpersonal Reactivity Index–Personal Distress (Davis, 1983)

78 Psychological & Physical Health Distress 0.34 HSCL-21; Hopkins Symptom Checklist-21, (Green, Walkey, McCormick, & Taylor, 1988)

80 Psychological & Physical Health Distress 0.46 0.87 HSCL-21; Hopkins Symptom Checklist-21, (Green, Walkey, McCormick, & Taylor, 1988)

80 Psychological & Physical Health Distress 0.42 0.87 PSS; Perceived Stress Scale (Cohen & Williamson, 1988)

82 Psychological & Physical Health Distress 0.36 0.89 PSS; Perceived Stress Scale (Cohen & Williamson, 1988); Stress

83 Psychological & Physical Health Distress 0.39 0.87 BSF; Brief Symptoms Inventory (Derogatis, 2000)

85 Psychological & Physical Health Distress 0.41 0.88 HSCL-21; Hopkins Symptom Checklist-21, (Green, Walkey, McCormick, & Taylor, 1988)

86 Psychological & Physical Health Distress 0.27 HSCL-21; Hopkins Symptom Checklist-21, (Green, Walkey, McCormick, & Taylor, 1988)

87 Psychological & Physical Health Distress 0.44 HSCL-21; Hopkins Symptom Checklist-21, (Green, Walkey, McCormick, & Taylor, 1988)


| Lopez, F. G. (2001). Adult attachment orientations, self-other boundary regulation, and splitting tendencies in a college sample. *Journal of Counseling Psychology*, 48(4), 440-446. | 37 | Psychological & Physical Health | Mental Health | -0.45 | 0.85 | RSES; Rosenberg Self-Esteem Scale (Rosenberg, 1965) |
| Lopez, F. G. (2001). Adult attachment orientations, self-other boundary regulation, and splitting tendencies in a college sample. *Journal of Counseling Psychology*, 48(4), 440-446. | 37 | Psychological & Physical Health | Mental Health | -0.31 | 0.85 | TAS; Toronto Alexithymia Scale (Taylor et al., 1985) |
| Pennebaker, J. W., Colder, M., & Sharp, L. K. (1990). Accelerating the coping process. *Journal of Personality and Social Psychology*, 58(3), 528-537. doi: 10.1037/0022-3514.58.3.528 | 64 | Psychological & Physical Health | Mental Health | -0.31 | 0.89 | GHQ-12; General Health Questionnaire-12 (Goldberg, 1978) |
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| Psychological & Physical Health | Mental Health | 0.50 | BFI; Big Five Inventory (John & Srivastava, 1999) |
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| Psychological & Physical Health | Mental Health | 0.31 | PANAS; Positive and Negative Affect Schedule (Watson et al., 1989); Males, Negative Affect |
| Psychological & Physical Health | Mental Health | 0.28 | MPSS-SR; Modified PTSD Symptom Scale-Self Report (Falsetti, Resnick, Resick, & Kilpatrick, 1993); Males, Frequency |
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78 Psychological & Mental Health -0.52 PWB; Psychological Wellbeing Inventory (Ryff, 1999)

78 Psychological & Mental Health -0.40 Life Satisfaction; Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985)

78 Psychological & Mental Health -0.51 General Need Satisfaction Scale (Deci & Ryan, 2000), Autonomy

78 Psychological & Mental Health -0.43 General Need Satisfaction Scale (Deci & Ryan, 2000), Competence

78 Psychological & Mental Health -0.45 0.89 General Need Satisfaction Scale (Deci & Ryan, 2000), Relatedness

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79 Psychological & Mental Health -0.32 0.89 Basic Need Satisfaction in Relationships Scale (La Guardia et al., 2000), Need Satisfaction

79 Psychological & Mental Health -0.44 0.89 Basic Need Satisfaction in Relationships Scale (La Guardia et al., 2000), Autonomy Subscale

79 Psychological & Mental Health -0.51 0.87 Basic Need Satisfaction in Relationships Scale (La Guardia et al., 2000), Competence Subscale


80 Psychological & Mental Health -0.51 0.87 Basic Need Satisfaction in Relationships Scale (La Guardia et al., 2000), Competence Subscale
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