

# Hide and seek – the role of personality, sense of coherence and experiential information in hidden information needs

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## Abstract

**Purpose**—The aim of this study is to assess the impact of personality traits and sense of coherence on concealing information needs out of shame. The study also investigates the link between concealed information needs and the use of experiential information for psychological wellbeing.

**Design/methodology/approach**—A PLS-SEM approach is used to assess and analyse the proposed conceptual model, which is based on the responses of 412 upper secondary school students.

**Findings**— The findings reveal that personality traits not only have direct significant effects on concealing information needs, but that their effects are also mediated by sense of coherence. The positive relationship between concealed information needs and the use of experiential information is confirmed in the study.

**Originality**— This study is the first to show that personality and sense of coherence influence concealing information needs. Two pathways are found. Firstly, negative emotionality and a low sense of coherence lead to a heightened sense of shame. Secondly, introversion induces a more guarded behaviour. The study, moreover, quantitatively demonstrates a link between concealed information needs and the use of experiential information for psychological wellbeing.

## Keywords:

Concealed information needs, Shame, Personality traits, Sense of coherence, Experiential information, Information poverty, Stigma

## 1. Introduction

The theory of information poverty states that shame and stigma sometimes make people purposefully hide their information needs (Chatman, 2000). Shame is, therefore, a noteworthy emotion in an information acquisition context that may lead to concealing information needs. Concealed information needs have not, however, been widely investigated beyond studies of

information poverty, particularly not in the general population. This article will address this research gap.

Studies of information poverty have demonstrated how marginalisation and other social or socio-economic factors may lead to concealed information needs (e.g. Canning and Buchanan, 2019). How individual differences play out in this context is less understood. As people differ both in their proneness to feelings of shame (Tangney, 1991) and in their openness to self-disclose (Loiacono, 2015), there is, however, reason to infer that individual traits would influence the degree to which people hide their information needs out of shame. Individual differences in information poverty have indeed been alluded to in previous research (Ruthven *et al.*, 2018; Yu, 2010; Yu *et al.*, 2016). The present study will address the role of individual differences by examining the effect of the five-factor model personality traits (Costa and McCrae, 1992) and sense of coherence (hereinafter SOC) (Antonovsky, 1987) on concealing information needs out of shame.

In today's information landscape, concealment of information needs may potentially be less consequential. Even secret information needs could be met online without ever being exposed to the outside world. Today, whatever experience you are going through, and however shameful you may find it, you are certain to find other people describing similar personal situations online. Experiential information may, in fact, be particularly relevant to concealed information needs as peers are often those who understand the experience best. The relationship between concealed information needs and use of experiential information has previously been demonstrated in qualitative research (Bronstein, 2014; Hasler, Ruthven and Buchanan, 2014; Hamer, 2003; Lingel and Boyd, 2013; Veinot, 2010). The present study will investigate this relationship through a quantitative approach.

To this end, the research questions guiding the study are as follows:

- 1. Which, if any, of the five-factor model personality traits influence concealing information needs out of shame?*
- 2. Does sense of coherence influence concealing information needs out of shame, and if so, how?*
- 3. Are concealed information needs related to the use of experiential information for psychological wellbeing? If so, how?*

The study thereby makes a twofold contribution: 1) examining how personality traits and SOC influence concealing information needs, and 2) studying the relationship between concealed information needs and the use of experiential information for psychological wellbeing. Our study investigates both the direct effect of personality traits and SOC on concealed information needs and the indirect effect of SOC as a mediator between personality and concealed information needs.

## **2. Theoretical perspective**

The theory of information poverty explains that people sometimes hide their information needs as a self-protective mechanism (Chatman, 1996). Concealment of information needs occurs when people are afraid of being judged by others. They, therefore, consider disclosing information needs as too risky and expect negative consequences to outweigh the benefits. As a result, they present a false reality to others and go to lengths to hide the condition of which they feel ashamed (Chatman, 1996). Information poverty has been found among high security prisoners (Canning and Buchanan, 2019), young mothers (Ruthven *et al.*, 2018), HIV/AIDS

patients (Veinot, 2009), intimate partner violence survivors (Westbrook, 2008), Pacific Island immigrants to New Zealand (Sligo and Jameson, 2000), extreme body-modifiers (Lingel and Boyd, 2013), people with mental health problems (Bronstein, 2014; Hasler *et al.*, 2014; Lannin *et al.*, 2016; Osiscovska *et al.*, 2013), gay men (Hamer, 2003) and economically poor groups (Sligo and Williams, 2001; Spink and Cole, 2001).

Concealment of information needs may be driven by several factors, such as social norms (Lingel and Boyd, 2013). One common mechanism behind concealed information needs is feelings of shame. Shame is an emotion with a strong social component. People feel shame when they sense that they cannot live up to social or moral standards and fear that others will judge them because of this (De Hooze *et al.*, 2018). Central elements of shame are self-consciousness (Welten *et al.*, 2012) and a sense of inferiority (Keltner and Harker, 1998). People who feel shame fear negative evaluation by others and social judgement (Cibich *et al.*, 2016). A common reaction to shame is therefore social withdrawal (Cibich *et al.*, 2016; Keltner and Harker, 1998). People who are prone to shame often cope by withdrawal and avoidance (Bennett *et al.*, 2016; De Rubeis and Hollenstein, 2009). People with stigmatised information needs may, for instance, avoid seeking information on the Internet as they fear their search history may be found by others (Namuleme, 2015).

### 3. Conceptual model and hypothesis development

#### 3.1 *The relationship between personality traits and concealing information needs out of shame*

Personality is understood as a “pattern of characteristic thoughts, feelings, and behaviours that distinguishes one person from another and that persists over time and situation” (Phares, 1991, p. 4). In this study, the analysis of personality will be based on the five-factor model, which describes five core dimensions of personality: openness to experience, conscientiousness, extraversion, agreeableness and negative emotionality (Costa and McCrae, 1992). In the following, we elaborate on each personality dimension and attempt to conceptualise it in the context of concealed information needs.

Openness to experience is a measure of imagination, creativity, intellectual curiosity and attentiveness to feelings (Costa and McCrae, 1992). People with high openness are tolerant and open-minded. This manifests in less prejudice and stigmatising attitudes towards others (Brown, 2012; Ingram *et al.*, 2016; Zaniotto *et al.*, 2018; 2020; Yuan *et al.*, 2018) as well as less self-stigma (Szcześniak *et al.*, 2021). Research has demonstrated a negative association between openness to experience and shame (Erden and Akbağ, 2015). Open people, moreover, seldom apply distancing coping strategies, such as suppressing emotions (Lee-Baggeley *et al.*, 2005). Open people may thus have a lower tendency to conceal information needs. This is further supported by research showing that open people self-disclose more; for instance, on social media (Cho, 2017). Taken together, the aforementioned studies paint a picture of openness as a mechanism of tolerance of both others and oneself, which may result in feeling less shame. Similarly, openness induces less suppressing coping mechanisms and a higher willingness to self-disclose, both of which counteract tendencies to hide information needs. Based on this literature, we developed the following hypothesis:

**H1:** *Openness to experience has a negative significant effect on concealing information needs out of shame*

Conscientiousness is a measure of self-control, virtue, impulse-control and dependability (Roberts *et al.*, 2005). Impulse-control could indirectly counteract hidden information needs, as it may prevent spontaneous behaviour that would lead to shame and secrecy in hindsight.

Research demonstrating a negative link between conscientiousness and shame point in this direction (Abe, 2004). Feelings of shame have, however, also been positively associated with conscientiousness (Erden and Akbağ, 2015). Perfectionism and achievement orientation are typical of conscientious persons. This could result in a higher likelihood of feeling shame if the conscientious person fails to meet his/her own high standards (Fedewa *et al.*, 2005; Klibert *et al.*, 2005). Theoretically, both a negative and a positive link could therefore be made between conscientiousness and shame. In addition, some studies have reported no connection whatsoever between conscientiousness and shame (Abraham and Pane, 2014). In the context of concealing information needs, self-control may, however, also lead to less transparency. Research supporting this notion shows that conscientious persons self-disclose less on social media (Hollenbaugh and Ferris, 2014). Based on the finding that conscientiousness is linked to less self-disclosure, we, therefore, developed the following hypothesis:

**H2:** *Conscientiousness has a positive significant effect on concealing information needs out of shame*

Extraverts are socially assertive, talkative, spontaneous and active. Introverts, in turn, are more reflective, analytical, independent, introspective and self-aware (Costa and McCrae, 1992). Extraverts are outspoken and share their personal experiences and emotions more openly, while introverts are more guarded (Costa and McCrae, 1992). It is, therefore, not surprising that extraversion has been linked to self-disclosure (Chen and Sharma, 2015; Cho, 2017; Loiacono, 2015). Several studies have, additionally, found that introverts tend to feel shame more often than extroverts (Abe, 2004; Christensen *et al.*, 1993; Einstein and Lanning, 1998; Erden and Akbağ, 2015; Muris *et al.*, 2018; Zhong *et al.*, 2003; Zhong *et al.*, 2008). One explanation may lie in the introspective nature of introverts who tend to reflect more on their own characteristics and actions. This reflection and, at times overthinking, could result in more feelings of shame. Introversion has similarly been positively linked with self-stigma (Lee *et al.*, 2016; Szcześniak *et al.*, 2021). Based on the tendency of extraverts to self-disclose more and feel less shame, we developed the following hypothesis:

**H3:** *Extraversion has a negative significant effect on concealing information needs out of shame*

Whereas extraversion is a measure of social activity and self-disclosure, agreeableness describes compassion and the ability to relate to others (Costa and McCrae, 1992). In the context of stigma, agreeableness has been found to lead to less stigmatising attitudes towards others (Brown, 2012; Zaniotto *et al.*, 2018; 2020; Yuan *et al.*, 2018). This tolerance seems to reflect back on agreeable people themselves as research has identified a negative association between agreeableness and feelings of shame (e.g. Abe, 2004). People who often feel shame, moreover, tend to withdraw socially (Cibich *et al.*, 2016; Keltner and Harker, 1998; Tignor and Colvin, 2017). The social relatedness and tolerance of agreeable people may, therefore, prevent concealing information needs. We consequently developed the following hypothesis:

**H4:** *Agreeableness has a negative significant effect on concealing information needs out of shame*

Negative emotionality describes a tendency to experience difficult emotions such as worry, tension, frustration, guilt, fear, sadness, anxiety and depression. A key facet of negative emotionality is self-consciousness. People who are self-conscious tend to feel uncomfortable around others, be sensitive to ridicule and prone to feelings of inferiority. Self-consciousness leads to a heightened fear of being scrutinised and evaluated by others (Christensen *et al.*, 1993; Muris *et al.*, 2018). It could, therefore, be inferred that a self-conscious person would probably hesitate to reveal a sensitive information need. This assumption is further strengthened as key

emotions in self-consciousness are shame and embarrassment (Costa and McCrae, 1992). It is, therefore, not surprising that negative emotionality is strongly related to feelings of shame (Abe, 2004; Christensen *et al.*, 1993; Einstein and Lanning, 1998; Muris *et al.*, 2018; Zhong *et al.*, 2003; Zhong *et al.*, 2008). Self-stigma has also been positively linked with negative emotionality (Bassirnia *et al.*, 2015; Lee *et al.*, 2016; Szcześniak *et al.*, 2021). This is reflected in studies demonstrating that proneness to shame spurs feelings of anxiety, depression, self-consciousness and worry (Câdea and Szentagotai-Tătar, 2018; Sullivan *et al.*, 2020; Tangney, 1991; Williamson *et al.*, 2020). Similarly, negative emotionality tends to induce avoiding or passive forms of coping such as escape-avoidance, interpersonal withdrawal and self-blame (Lee-Baggeley *et al.*, 2005). Those with high negative emotionality also self-disclose less on social media (Loiacono, 2015). Based on the extensive body of research linking negative emotionality to shame and withdrawal, we developed the following hypothesis:

**H5:** *Negative emotionality has a positive significant effect on concealing information needs out of shame*

### *3.2 The relationship between the five-factor model and sense of coherence*

Sense of coherence (SOC) describes a resilience to stress, which explains why some people cope well with stressors in situations that others find overwhelming (Antonovsky, 1987). People with a strong SOC find that their environment makes sense, and are confident that they have the resources needed to cope with challenging situations. Sense of coherence consists of three components: comprehensibility, manageability and meaningfulness. Comprehensibility suggests that a person perceives stimuli from the environment as structured, predictable and understandable. Manageability refers to the belief that one has the resources needed to deal with the challenges of life. Finally, meaningfulness suggests that a person can find meaning in his/her life despite challenges (Antonovsky, 1987). Previous research has found a strong link between personality and SOC, showing that the five-factor model personality dimensions explain around 40% of the variance in SOC (Grevenstein and Bluemke, 2015; Hochwalder, 2012). Despite the close correlation, SOC cannot merely be depicted as an expression of personality. While personality traits influence several aspects of cognition, emotion and behaviour, SOC is specifically a coping resource. SOC, therefore, has unique explanatory value particularly in explaining mental health, satisfaction with life and personal distress (Grevenstein and Bluemke, 2015; Mc Gee *et al.*, 2018). Moreover, in contrast to personality traits that are expected to remain stable over a lifetime, SOC is rather an orientation towards life that may develop as a result of life experiences (Antonovsky, 1987; Hakanen *et al.*, 2007; Nilsson *et al.*, 2010). People's SOC is, therefore, more malleable than their personality traits. In the following, we elaborate on each personality trait and their associations with SOC.

The results relating SOC to openness to experience have varied across studies. Some studies have found a positive association (Barańczuk, 2021; Feldt *et al.*, 2007; Kase *et al.*, 2018; Sheldon and Kasser, 1995), while others have failed to find a link between the two concepts (Ebert *et al.*, 2002; Grevenstein and Bluemke, 2015; Hochwalder, 2012). A positive connection could be explained by both the comprehensibility and meaningfulness dimensions of SOC. Intellectual curiosity renders open persons eager to learn and investigate (Costa and McCrae, 1992). This could increase their sense of comprehensibility in life (Hochwalder, 2012). In addition, those with high openness to experience have a higher capacity to find meaning in new situations (Williams *et al.*, 2009). This, in turn, would strengthen their sense of meaningfulness. These connections resulted in the following hypothesis:

**H1a:** *Openness to experience has a positive significant effect on sense of coherence*

SOC has been found to be positively linked to conscientiousness (Barańczuk, 2021; Ebert *et al.*, 2002; Feldt *et al.*, 2007; Grevenstein and Bluemke, 2015; Hochwalder, 2012; Kase *et al.*, 2018). The organised and structured nature of conscientious persons could explain the link to a strong SOC, particularly manageability (Hochwalder, 2012). These relationships resulted in the following hypothesis:

**H2a:** *Conscientiousness has a positive significant effect on sense of coherence*

A defining element of SOC is how connected people feel to the social structures around them. People with a strong SOC feel connected to their social networks, and heard when they have messages to convey (Antonovsky, 1991). A similar social orientation is characteristic of extraverts. Extraverts enjoy social interaction, have large networks and are assertive and talkative (Costa and McCrae, 1992). It is, therefore, not surprising that SOC has been positively linked to extraversion (Barańczuk, 2021; Ebert *et al.*, 2002; Feldt *et al.*, 2007; Grevenstein and Bluemke, 2015; Hochwalder, 2012; Kase *et al.*, 2018). This link resulted in the following hypothesis:

**H3a:** *Extraversion has a positive significant effect on sense of coherence*

Moreover, agreeableness has been positively linked to SOC (Barańczuk, 2021; Ebert *et al.*, 2002; Feldt *et al.*, 2007; Grevenstein and Bluemke, 2015; Hochwalder, 2012; Kase *et al.*, 2018). The link between agreeableness and SOC could be explained by the social connectedness inherent in SOC (Antonovsky, 1991, 1993). Whereas extraversion is a measure of social activity and assertion, agreeableness describes altruism and empathy (Costa and McCrae, 1992). Agreeable people’s ability to build and maintain interpersonal relationships could, thereby, explain the link to a high SOC (Hochwalder, 2012). As such, we hypothesise that:

**H4a:** *Agreeableness has a positive significant effect on sense of coherence*

SOC describes a resilience to stress, which explains why some people cope well with stressors in situations that others find overwhelming. Central to SOC is also the ability to find meaning in life despite difficult circumstances, cognitively make sense of life and have resources to manage challenges (Antonovsky, 1987). In contrast, negative emotionality describes a vulnerability to stress where the person tends to panic and be unable to cope. Negative emotionality not only induces susceptibility to negative emotions such as fear, sadness, anxiety and depression but also influences cognition and manageability of life. Pessimism, maladaptive thinking, hopelessness and lethargy are typical of depression (Costa and McCrae, 1992). Negative emotionality may, therefore, directly influence all three components of SOC, namely comprehensibility, meaningfulness and manageability. Negative emotionality would reduce comprehensibility through maladaptive and pessimistic thinking, thereby influencing the cognitive element of SOC. Negative emotionality would also lower the sense of meaningfulness in life, if the prevailing emotions were despair and hopelessness. Lack of energy, worry and stress may further impact the sense of manageability. It is, therefore, not surprising, that a strong link has been found between strong SOC and low negative emotionality, i.e. emotional stability (Barańczuk, 2021; Ebert *et al.*, 2002; Feldt *et al.*, 2007; Grevenstein and Bluemke, 2015; Hochwalder, 2012; Kase *et al.*, 2018). This link is so strong that a conceptual overlap has been suggested. Empirical studies have, however, found that the two concepts are not identical despite the strong link (Grevenstein and Bluemke, 2015). These connections resulted in the following hypothesis:

**H5a:** *Negative emotionality has a negative significant effect on sense of coherence*

### 3.3 The relationship between sense of coherence and concealing information needs out of shame

Previous studies have not explicitly investigated the impact of SOC on shame or concealing information needs. Some connections may, however, be inferred from studies on similar traits. SOC, for instance, reinforces self-compassion (Grevenstein *et al.*, 2016), which may contribute to reducing shame and stigma (Świtaj *et al.*, 2017). Similar psychosocial variables to SOC, such as hope, self-esteem, self-efficacy and sense of empowerment have been identified as important internal resources that reduce self-stigma (Livingston and Boyd, 2010). As this study specifically focuses on concealing information needs, it is also relevant to look at SOC with respect to social relations. Research shows that a weak sense of coherence may lead to social avoidance in stigmatised contexts (Schmid-Ott *et al.*, 2007). A weak SOC also results in low information mastering, which includes a sense of not feeling heard and understood (Ek, 2005, 2008). Feeling socially alienated could be a reason for concealing information needs. SOC may, thereby, counteract concealing information needs in several ways. First and foremost, SOC increases resilience to stress and active coping efforts, counteracting shame and a tendency to withdraw. People with a strong SOC, moreover, feel socially supported, which could motivate them to reach out to social connections rather than conceal information needs. The comprehensibility and meaningfulness components of SOC could, furthermore, increase the ability to reappraise the conditions of which one feels ashamed, thereby diminishing the consequent concealment of information needs. Based on these notions, we developed the following hypothesis:

**H6:** *Sense of coherence has a negative significant effect on concealing information needs out of shame*

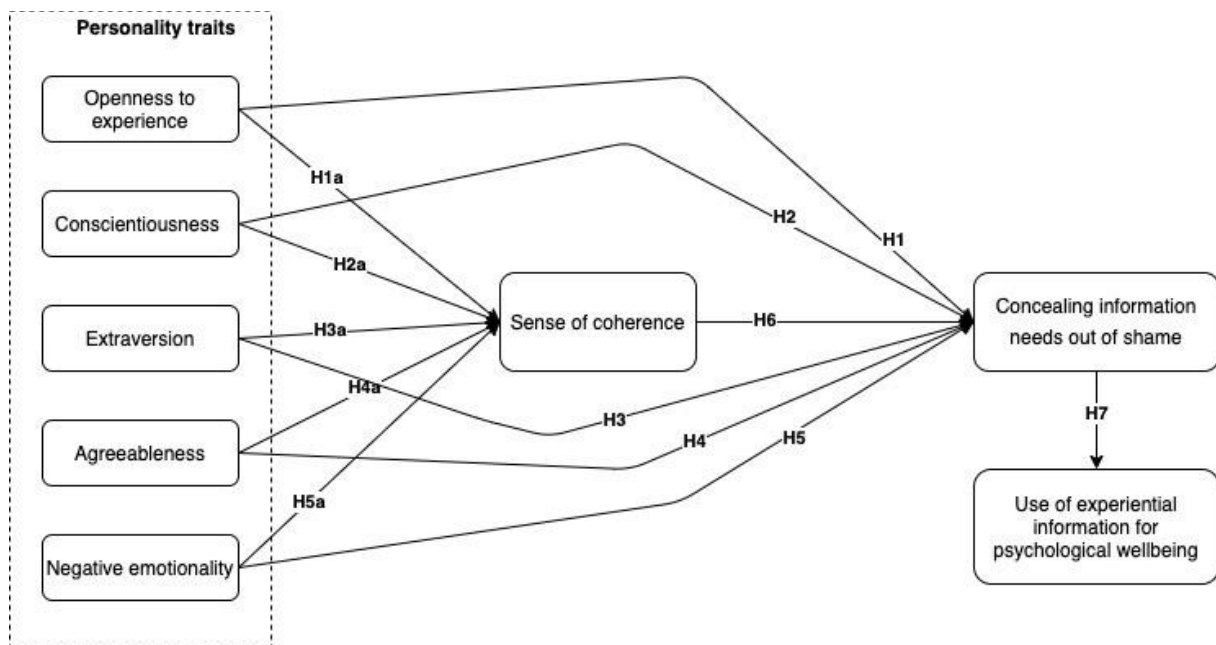


Figure 1. Conceptual model.

### *3.4 Concealing information needs out of shame and use of experiential information for psychological wellbeing*

Experiential information has been defined as “wisdom and know-how gained through reflection upon personal lived experience” (Borkman, 1999: 228 in Veinot, 2010). Experiential information comes both in the form of practical advice and personal stories (Veinot, 2010), which may be gained either face to face or online. Today’s information landscape provides a plethora of experiential information from peers on online forums and similar sites. Several studies have demonstrated that people with stigmatised information needs look to online forums for support, often specifically looking for experiential information from peers who share the same situation (Hamer, 2003; Hasler *et al.*, 2014; Loudon *et al.*, 2016; Moore *et al.*, 2016; Ruthven *et al.*, 2018; Zigron and Bronstein, 2019; Yeshua-Katz, 2019). People with self-stigma often prefer to look for information anonymously online (Rains and Wright, 2016). Online communities for stigmatised conditions share two important features: anonymity and reach (Yeshua-Katz, 2019). Online forums provide an opportunity to lurk and for any posts to be made anonymously. This protects hidden information needs and reduces fear of being identified (High and Solomon, 2011). What drives people with concealed information needs to seek information on Internet forums is the shame of not being “normal” and having “unnatural feelings” (Hasler *et al.*, 2014). A study of information needs expressed on an online forum found that 22% of posters revealed signs of information poverty in their posts. Common for these posters was that they requested information specifically from those who shared the same experience. The posts, furthermore, revealed thoughts about the risk of exposing information needs to others (Ruthven *et al.*, 2018).

Experiential information can have a powerful positive impact on emotional wellbeing through the support and identification it provides (Hasler *et al.*, 2014; Loudon *et al.*, 2016; Veinot, 2009). Sharing experiential information with others in similar situations is particularly beneficial in stigmatised communities (Moore *et al.*, 2016; Veinot, 2010). Peers with shared experiences provide identification, support, empathy and a sense of not being alone (Hasler *et al.*, 2014; Pendry and Salvatore, 2015; Zigron and Bronstein, 2019; Veinot, 2009). Online forums provide four key benefits that reduce shame and stigma; a safe space, virtual support, strengthening positive identity and repairing negative identity features (Moore *et al.*, 2019). It should, however, be noted that peers on online forums may also be judgmental. People may, therefore, also hide information needs on these forums due to fear of judgement and instead opt for lurking (Loudon *et al.*, 2016). Based on the above discussion, we developed the following hypothesis.

**H7:** *Concealing information needs out of shame has a positive significant effect on the use of experiential information for psychological wellbeing*

The proposed path relationships in the research proposed model are shown in Figure 1.

## **4. Methodology**

In the following, we discuss the measurement model, the items used to measure the constructs and explain data collection procedures.

### *4.1 Developing a measurement model*

Concealing information needs out of shame was measured by three items derived from the *information poor* scale described in Heinström *et al.* (2020). Respondents were asked to rate the following questions: (1) *Sometimes I choose not to look for information as I do not want to reveal an information need that feels sensitive to me*, (2) *I would not like anyone to find out*



*about my personal problems, and (3) I do not mind asking for advice from others regarding topics that I feel awkward about.* The use of experiential information for psychological wellbeing was measured by two items derived from the *experiential* scale described in Heinström *et al.* (2019). These two items particularly focused on the use of experiential information for psychological wellbeing. The respondents were asked to answer the following questions: (1) *Identifying with others going through the same experience makes my own challenges seem smaller,* and (2) *It is comforting to read other peoples' stories about overcoming challenges that I face in my own life.* A five-point scale ranging from “1” *totally (strongly) disagree* to “5” *totally (strongly) agree* was used to measure concealing information needs out of shame, the use of experiential information and personality. The personality traits were measured by a 10-item scale of the five-factor model (Lönnqvist *et al.*, 2008). The scale measures each of the five dimensions by two items (each item being a pair of adjectives), giving a total of 10 items (20 adjectives). For example, we listed features that respondents could use to describe people. Within each item, there were two interrelated adjectives. We then asked respondents to assess the extent to which the traits describe them, for example assigning a rating from “1”, *strongly disagree* to “5 *strongly agree* on items such as “*outgoing, enthusiastic*”, or “*selfish, self-centred*”. Sense of coherence was measured by a seven-point validated scale by Antonovsky (1987). The scale consists of 13 items measuring manageability, meaningfulness and comprehensibility. For example, we asked “*Do you have the feeling that you do not really care about what goes on around you?*” or “*Do you have the feeling that you are being treated unfairly?*”

#### 4.2 Survey administration, sample and data collection

Based on a thorough literature review and the above-mentioned explanation of the measures, we created an online survey questionnaire that was administered through Survey Monkey (<https://fi.surveymonkey.com/>). We recruited respondents from eight upper secondary schools in Finland which took part in a teaching intervention. In total, we received 419 responses. Seven responses were removed as they were incomplete. The final dataset thus comprises 412 respondents. We first asked for some background information, such as gender, and respondents were then asked to rate their perception of the construct level items in the second section of the questionnaire, which included 28 items in total. Out of 412 respondents, 248 (60.2%) were female and 158 (38.3%) males. Three respondents did not disclose their sex. All the respondents were upper secondary school students, aged 16 to 19.

## 5. Data analysis and results

### 5.1 Validity and reliability

Several tests, such as item loadings and composite reliability, were used to assess the constructs' internal consistency and scale reliability. All the survey items (except one item: OPEN\_1) exceeded the recommended threshold value for factor loadings, as they were all above 0.70. Additionally, we had to exclude four items of SOC from further analysis due to low loadings of 0.60 (two from comprehensibility, one from manageability and one from meaningfulness). Internal consistency was assessed via Cronbach alpha, which is a measure of the internal reliability of latent constructs. The recommended threshold value is 0.70 (Hair *et al.*, 2011).

Cronbach  $\alpha$  has a number of rigorous assumptions, including uni-dimensionality, uncorrelated errors and essential tau-equivalence of all items. In this view, essential tau-equivalence necessitates the equivalence of all covariances between the items. These assumptions should be

double-checked, as they are frequently violated. As such,  $\alpha$  over- or underestimates the true reliability. It has been argued that a small number of scale items would violate tau-equivalence and give a lower reliability coefficient. The value of alpha decreases for scales with few items (e.g. a scale with less than 5 items), and in such cases it is common to find quite low Cronbach values (e.g. 0.50) (e.g. Dall'Oglio *et al.*, 2010; Perry *et al.*, 2004). In this research, all personality traits had two items in each scale. The results of internal reliability for the personality scales showed the following results: openness to experience (0.42), conscientiousness (0.48), extraversion (0.74), agreeableness (0.52) and negative emotionality (0.45). The reliability proved low for all scales except extraversion. Due to the low reliability, the option of using each personality item as a separate measure was investigated in explorative analyses. This solution, however, did not add value. Consequently, the two items measuring each respective personality trait were combined into summary variables. Reliability for SOC as a whole scale and for each respective sub-scale was tested using Cronbach  $\alpha$ . This gave the following results: sense of coherence (0.85), comprehensibility (0.71), manageability (0.67), meaningfulness (0.69). Reliability was also tested using Cronbach  $\alpha$  for the concealing information needs out of shame scale (0.67) and experiential information scale (0.79).

**Table 1.** Internal consistency and reliability results

	Construct	Item	Loadings	Mean	Std. dev	Cronbach $\alpha$	CR	AVE
Personality traits	Openness to experience	OPEN_1	0.67	3.28	1.19	.42	.75	.61
		OPEN_2	0.84	3.16	1.34			
	Conscientiousness	CONS_1	0.81	4.04	0.80	.48	.79	.66
		CONS_2	0.82	3.47	1.18			
	Extraversion	EXTR_1	0.90	3.63	1.09	.74	.89	.80
		EXTR_2	0.89	3.55	1.05			
	Agreeableness	AGRE_1	0.87	3.55	1.07	.52	.80	.67
		AGRE_2	0.77	4.04	0.80			
	Negative emotionality	NEEM_1	0.86	3.13	1.24	.45	.78	.64
		NEEM_2	0.74	4.01	0.87			
Sense of coherence	Comprehensibility	COM_1	0.71	4.92	1.50	.71	.80	.58
		COM_2	0.78	4.37	1.55			
		COM3	0.79	5.06	1.58			
	Manageability	MAN_1	0.70	4.61	1.47	.67	.77	.52
		MAN_2	0.74	5.02	1.74			
		MAN_3	0.76	4.44	1.43			
	Meaningfulness	MEAN_1	0.72	4.88	1.49	.69	.83	.61
		MEAN_2	0.82	4.92	1.50			
		MEAN_3	0.81	4.61	1.47			
Concealing information needs out of shame	SHA_1	0.74	2.71	1.17	.67	.76	.52	
	SHA_2	0.71	3.00	1.22				
	SHA_3	0.71	3.00	1.11				
Use of experiential information for psychological wellbeing	UEXI_1	0.89	3.45	1.00	.79	.91	.83	
	UEXI_2	0.93	3.80	1.01				

The composite reliability (CR) was calculated in our evaluation of construct reliability, with a desired threshold value of 0.70 or higher (Hair *et al.*, 2011). As shown in Table 1, the lowest CR value was 0.75 for openness to experience and the highest was 0.91 for the use of experiential information for psychological wellbeing. This indicates that all the constructs satisfied the threshold value; therefore, we established the acceptable construct reliability. We also examined the convergent validity, which refers to the degree to which two measures of constructs that theoretically should be related are in fact related. According to Hair *et al.* (2011), the relationship can be examined by the average variance extracted (AVE), and the recommended AVE threshold is 0.50 or higher (Fornell and Larcker, 1981). Here, all the AVE

values were between 0.52 and 0.83, and thus convergent validity was established in our data (see Table 1).

**Table 2.** Discriminant validity (Fornell and Larcker criterion)

	AGRE	CONS	UEXI	EXTR	NEEM	OPEN	SOC	SHAM
Agreeableness	<b>0.819</b>							
Conscientiousness	0.122	<b>0.811</b>						
Use of experimental information	0.207	0.029	<b>0.910</b>					
Extraversion	0.210	0.089	0.009	<b>0.892</b>				
Negative emotion	-0.077	-0.253	0.153	-0.166	<b>0.802</b>			
Openness to experience	0.118	0.096	0.062	0.258	-0.186	<b>0.712</b>		
Sense of coherence	0.144	0.338	-0.148	0.246	-0.522	0.084	<b>0.665</b>	
Concealing information needs	-0.105	-0.177	0.158	-0.358	0.339	-0.242	-0.401	<b>0.720</b>

Unlike convergent validity, the discriminant validity test seeks to prove that there is no correlation or relationship between the measurements or concepts. To put it another way, the goal of discriminant validity is to show that the measures used to measure a construct truly measure the intended construct and that the construct is not captured by other measures (Henseler *et al.*, 2015). We were able to determine the distinctness of the constructs and discriminant validity in our data using the Fornell and Larcker (1981) criterion and the values reported in Table 2. However, as we used PLS-SEM to perform the analysis, we also report the results of the heterotrait–monotrait ratio (HTMT), which is an alternative approach to establishing discriminant validity. As recommend by Henseler *et al.* (2015), all values were below the desired threshold value of 0.85; see Table 3. Overall, discriminant validity can be accepted for this measurement model and supports the discriminant validity between the constructs (Henseler *et al.*, 2015).

**Table 3.** Discriminant validity (HTMT)

	AGRE	CONS	UEXI	EXTR	NEEM	OPEN	SOC	SHAM
Agreeableness								
Conscientiousness	0.269							
Use of experimental information	0.320	0.147						
Extraversion	0.353	0.150	0.041					
Negative emotion	0.336	0.564	0.240	0.380				
Openness to experience	0.442	0.233	0.202	0.838	0.347			
Sense of coherence	0.226	0.525	0.192	0.306	0.836	0.337		
Concealing information needs	0.223	0.350	0.240	0.562	0.655	0.791	0.594	

Furthermore, we examined the multicollinearity issue. If the dependent variable in the model (the use of experiential information for psychological wellbeing) is predicted by more than one independent variable, this test should be performed. As there was a chance of intercorrelation among the dependent variables, the multicollinearity was investigated using the value of

variance inflation factor (VIF). Several authors, such as Petter *et al.* (2007), have recommended that the lowest acceptable VIF value is 3.3. Based on the VIF values obtained, the lowest (1.092) and the highest (1.796), we determined that multicollinearity was not an issue in our data.

### 5.2 Common method bias

We examined common method bias to investigate any bias attributable to the measurement method (CMB). We tested the CMB through two different approaches: (1) Harman's one-factor test, as recommended by Podsakoff and Organ (1986), whose results showed that none of the constructs had a value of more than 50% of the variance, and (2) the common latent factor (CLF) technique, as recommended by Podsakoff *et al.* (2003). The CLF, according to MacKenzie and Podsakoff (2012), provides a more robust understanding of the CMB than Harman's one-factor test. We compared the chi-square values of two models: an unconstrained model versus a model where all the paths were constrained to zero. The results showed that the CMB had no effect on either model's path relationships.

### 5.3 Structural model analysis

Figure 2 shows the results of the structural model, including the explained variance ( $R^2$ ) of the predicted variable (i.e. use of experiential information for psychological wellbeing). PLS-SEM was used to assess the path relationships in the proposed model. It should be noted that PLS-SEM cannot provide a full model fit report. However, the Standardised Root Mean Square Residual (SRMR) value can instead be used for the model fit result. The SRMR refers to the difference between the observed correlation and the model implied correlation matrix. A value of less than 0.1 (or 0.08 in a more conservative version) could be considered a good fit. In our analysis, the SRMR value was (0.079).

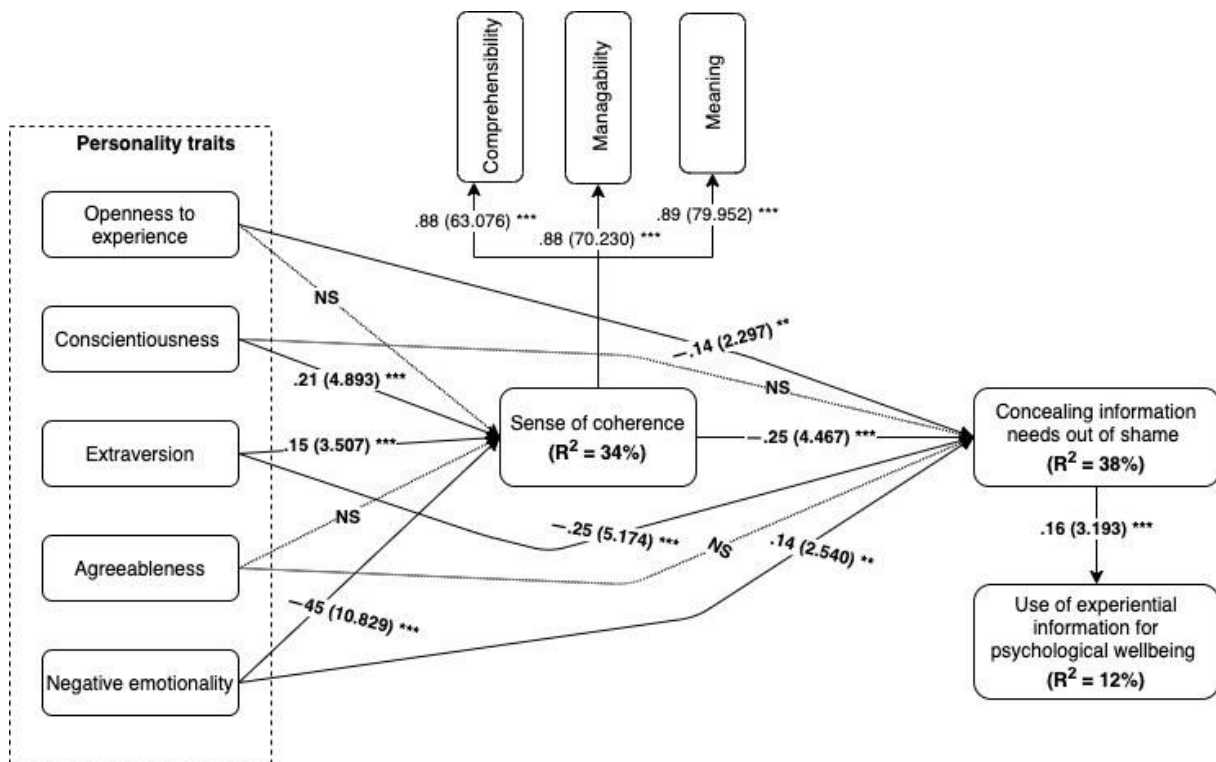


Figure 2. Conceptual model results

Notes: \*\*\*  $p$ -value < 0.001; \*\*  $p$ -value < 0.01; \*  $p$ -value < 0.05.

To assess the structural results, a bootstrap analysis with 5,000 resamples was used to determine the significance of the estimates (t-statistics) in the path model. In addition, several alternative conceptualisations of the model were assessed, and the results showed that the model presented in Figure 2 was the most appropriate and provided support for our hypotheses.

The SEM results showed that the outcome variable, use of experiential information for psychological wellbeing was explained by a variance of 12%. In addition, concealing information needs was explained by a variance of 38%, followed by 34% for sense of coherence. The SEM results revealed that the path between openness to experience and concealing information needs, as we predicted, was negatively significant ( $\beta = -0.14$ ,  $t = 2.297$ ,  $p < 0.01$ ). Therefore, H1 was accepted by the model. The path between conscientiousness as well as agreeableness to concealing information needs was not significant, and H2 and H4 were thus rejected by the model. The analysis, however, revealed that the path between extraversion to concealing information needs was negatively significant ( $\beta = -0.25$ ,  $t = 5.174$ ,  $p < 0.001$ ); thereby providing theoretical support for H3. Finally, we found a positive significant ( $\beta = 0.14$ ,  $t = 2.540$ ,  $p < 0.01$ ) relationship between negative emotionality and concealing information needs, providing theoretical support for H5 in the model.

We found theoretical support for H2a, H3a and H5a. The SEM results showed that the path relationships between (i) conscientiousness ( $\beta = 0.21$ ,  $t = 4.893$ ,  $p < 0.001$ ), (ii) extraversion ( $\beta = 0.15$ ,  $t = 3.507$ ,  $p < 0.001$ ) and (iii) negative emotionality ( $\beta = -0.45$ ,  $t = 10.829$ ,  $p < 0.001$ ) to sense of coherence were all significant. In addition, the path between SOC to concealing information needs was negatively significant ( $\beta = -0.25$ ,  $t = 4.467$ ,  $p < 0.001$ ), thus providing theoretical support for H6. Finally, the relationship between concealing information needs and use of experiential information for psychological wellbeing was significant ( $\beta = 0.16$ ,  $t = 3.193$ ,  $p < 0.001$ ), hence H7 was supported by the model.

## 6. Discussion

Our study found that almost 38% of the variance in concealing information needs out of shame could be explained by the five-factor model personality traits and sense of coherence. A combination of low sense of coherence, negative emotionality, introversion and low openness to experience particularly increased the likelihood of concealing information needs. SOC was found to mediate the relationship between personality traits and concealed information needs. The results confirm the importance of individual differences such as personality (e.g. Heinström, 2003, 2010) and SOC (Ek, 2005) in information behaviour. Individual differences in particular help us to understand why people behave and react as they do, opening doors for more tailored information services.

Our findings suggest two different pathways in which personality and SOC influence concealing information needs out of shame. The first explanation lies in the link to introversion, which was the personality trait that had the strongest impact on concealing information needs. Introversion is an introspective trait where people both tend to reflect more on their experiences and be guarded in relation to what they share with others. This could make them hesitate to reveal information needs, particularly those of which they feel ashamed. Not sharing an information need with others does not, however, necessarily imply lack of information. Our study found a positive association between concealing information needs and use of experiential information for identification and support. This suggests, that although introverts do not reveal their information needs to others, they may, nevertheless, seek out relevant experiential information. Introversion may, thus, lead to hiding information needs from others, but does not necessarily result in information poverty.

The second pathway to concealed information needs lies in a weak SOC which was strongly linked to high negative emotionality. Self-consciousness and fear of judgment by others are characteristic of negative emotionality. This may lead to secrecy and a fear of rejection if a stigmatised information need is revealed. Negative emotionality may also result in an exaggerated sense of shame, whereby a person self-imposes self-stigma in relation to a personal condition. He/she would then choose to do their utmost to hide this condition, including hiding information needs. Negative emotionality also directly weakens a person's SOC, which is a measure of stress resilience. A weak SOC leads to a sense of alienation from social support structures and difficulty finding meaning in life. As people have fewer social connections whom they trust and find their lives meaningless, this could further augment their sense of shame and alienation. The study thereby confirmed that a weak SOC leads to weak information mastering (Ek, 2005).

Experiencing shame and concealing information needs is, however, not something that should necessitate additional shame. Revealing information needs is not necessarily always beneficial. It is important to understand and respect that people need boundaries, including having hidden information needs with emotional ties. Instead of a focus on deficit, we need to acknowledge that defensive information behaviour may be a rational response to e.g. marginalisation (Gibson and Martin, 2019). This also alludes to the critique of the information poverty concept as being driven by a provision idealising discourse (Haider and Bawden, 2007). What is problematic in this context is not necessarily the lack of information, but rather the sense of shame and stigmatisation in relation to various conditions and experiences. The solution, therefore, would lie in combatting stigmatisation and shame in marginalised and stigmatised populations. Campaigns promoting openness and awareness of mental health, stigmatised health concerns, sexual orientation or marginalised identities would open for greater societal tolerance. Less stigmatisation would also counteract the more problematic aspects of shame as an information barrier, as information seeking is often the first step to more overt help-seeking. Concealing information needs in relation to mental health problems may, for instance, result in both less access to potentially helpful information and be a barrier to counselling and help-seeking (Lannin *et al.*, 2016).

The study found that concealing information needs not only occurs in stigmatised groups, but also in the general population. Caution is, however, needed regarding the generalisability of the findings as the respondents were upper secondary students. Adolescents are an age group who are particularly vulnerable to feelings of unfavourable social comparison, self-criticism and shame (Gilbert and Irons, 2009). Future research is, therefore, needed to explore concealed information needs in other age groups.

The present study found an explicit relationship between concealing information needs out of shame and benefitting psychologically from reading about other people's experiences. This was in line with previous research (e.g. Hamer, 2003; Hasler *et al.*, 2014; Loudon *et al.*, 2016; Moore *et al.*, 2016; Ruthven *et al.*, 2018; Zigron and Bronstein, 2019). A limitation of the study is that it did not specifically investigate whether people looked for experiential information from others in relation to their concealed information needs. More research, especially qualitative, is therefore needed to explore this connection in more depth. Further research should, moreover, elaborate on information acquisition within stigmatised populations, including emotional information needs and the role of shame. Identification and the sense of not being alone in a stigmatised experience often improve psychological wellbeing. Strengthening a person's SOC could also be a way to counteract shame (Mayer *et al.*, 2019). This would increase stress resilience and trust towards others, who in turn could provide support in relation to stigmatised information needs.

## 7. Conclusion

The study makes three original contributions to the literature. Firstly, concealing information needs out of shame is found in the general population, in this case upper secondary students. Secondly, concealing information needs is quantitatively linked to the use of experiential information for psychological wellbeing. Thirdly, personality traits and SOC are found to influence concealing information needs out of shame. Negative emotionality and introversion increased the tendency to conceal information needs, while openness to experience and a strong sense of coherence counteracted concealing information needs.

The study contributes a more nuanced understanding of concealed information needs. People differ in the extent to which they choose to reveal information needs linked to topics of which they feel ashamed, and these differences may depend on their personality and sense of coherence. Some people are more guarded about what they share with others. Others, in turn, may feel a heightened sense of shame and fear of judgment that compels them to hide information needs. However, concealed information needs do not necessarily imply information poverty. Instead, people turn to experiential information from peers who share their concealed condition.

Chatman's theory of information poverty focused on information deprivation (Chatman, 1996). Mechanisms central to the theory may, however, also explain the pull of insider-information and shared experiences in situations involving secret information needs. Turning to insiders could therefore, in fact, lead to information richness, particularly regarding the importance and strength of the information provided in terms of the emotional value of peer support and identification. Awareness of the emotional benefits of information for psychological wellbeing, such as experiential information from peers, could thereby contribute to emotional information literacy.

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