The Darkside of Online Social Networks:
Measuring the Negative Effects of Social Influence in Online Social Networks

Sabrina Stöckli[a,*], Henry Shen[b], Fabian Bartsch[b]

[a]University of Bern, [b]IÉSEG School of Management, *sabrina.stoeckli@imu.unibe.ch

Introduction

Consumers vary in the extent to which they are susceptible to social influence. These interindividual differences are relevant, for instance, as social influence drives trust in Online Social Networks (OSNs) such as Instagram (Colliander, 2019), leads to addictive OSN usage (Pornsakulvanich, 2017) and, in turn, to decreasing well-being (Marino et al., 2016).

We propose to adapt a traditional concept for susceptibility to social influence so that it reflects the nature of *online* social influence and can be used in OSNs. Traditional social influence concepts focus on offline interactions. Yet, OSN interactions differ substantially from offline interactions.

We conceptualize that *Susceptibility to Online Social Influence* (SOSI) has two dimensions: **Susceptibility to Informative Online Social Influence** (SIOSI), i.e., the tendency to seek and accept information from other OSN users to reduce uncertainty in decision making; and **Susceptibility to Normative Online Social Influence** (SNOSI), i.e., the tendency to conform to social norms to obtain approval from other OSN users.

Based on this, we **develop a scale to measure SOSI**. This scale will help to better understand why and how OSN users change their attitudes and behaviors in the direction of other users.

Study 1 – Item Generation

We generated an **initial item pool** of 28 items to capture both informative (15 items) and normative (13 items) aspects of SOSI. We subjected these items to an **expert screening** (N = 24) to judge their content validity, clarity, and comprehensiveness. Evaluating their ratings and comments resulted in a **final item pool of 30 items** (2x15, note that we added items suggested by experts).

Study 2 – Scale Purification

We incorporated the 30 items into a survey. 407 MTurkers took the survey (M_{age} = 35.15, SD_{age} = 15.12).

We conducted exploratory principal axis factor analysis with oblimin rotation (DeVellis, 2016). We subsequently removed items that would exhibit low factor loadings (< .50), would cross-load (>.40), or would overlap with other items (inter-item correlations > .85).

The **final set of 14 items** (2x7 items) exhibited satisfactory item properties: No cross-loadings above .40, factor loadings above .60, and inter-item reliability above. 70 (α_{SIOSI} = .96; α_{SNOSI} = .91).

Study 3 – Replication and Nomological Validation

Method

We tested the set of 14 items with 945 different MTurkers (M_{age} = 37.29, SD_{age} =11.11) along with several additional measures for validation purposes. For **convergent validation**, we measured OSN usage, i.e., the daily time spent on OSNs (1=*I do not use social media at all*; 7=*I use social media more than 4 hours a day*), and OSN attitude (1=*strongly dislike social media*; 7=*strongly like social media*). For a formal **discriminant validity** test, we used Bearden et al.'s (1989) scale to measure Consumer Susceptibility to Interpersonal Influence (CSI). The CSI scale is a typical measurement for interindividual differences of susceptibility to social influences in the offline context. Different from SOSI, CSI captures differences in susceptibility to interpersonal influence in small face-to-face interactions focusing on product and brand recommendations. Both constructs are conceptually related, but should capture different concepts and hence differ in their ability to predict OSN behaviors. For **nomological validation**, we captured *need for cognitive closure* and *need to belong* as antecedents as well as *trust in OSN, OSN addiction, self-esteem* and *well-being* as consequences.

Results

Subjecting the newly developed scale to a confirmatory factor analysis led to the exclusion of two items from the informative SOSI dimension (SIOSI), resulting in an overall satisfactory measure (2nd Order: $\chi^2(52)$ = 234.978, RMSEA = .061, SRMR = .049, CFI = .969, TLI = .961) of SOSI with good psychometric properties (see figure below).

Convergent validity. The scale positively correlates with OSN usage (r_{daily} = .285; r_{hourly} = .370) and OSN attitude (r = .460). This supports convergent validity.

Discriminant validity. We included the CSI scale allowing for a formal assessment of discriminant validity using the Fornell and Larcker criterion. In a confirmatory factor analysis, the average variance extracted of all constructs is greater than the square correlation between all pairs of constructs, which speaks for discriminant validity.

Nomological validation. The figure below depicts and empirically supports a comprehensive network including both antecedents and consequences of SOSI. Results show that (a) both *need for cognitive closure* and *need to belong* are antecedents of SOSI and that (b) SOSI positively relates to *trust in OSN*, positively relates to *OSN addiction*, and ultimately exerts a total negative effect on *self-esteem* and *well-being*.
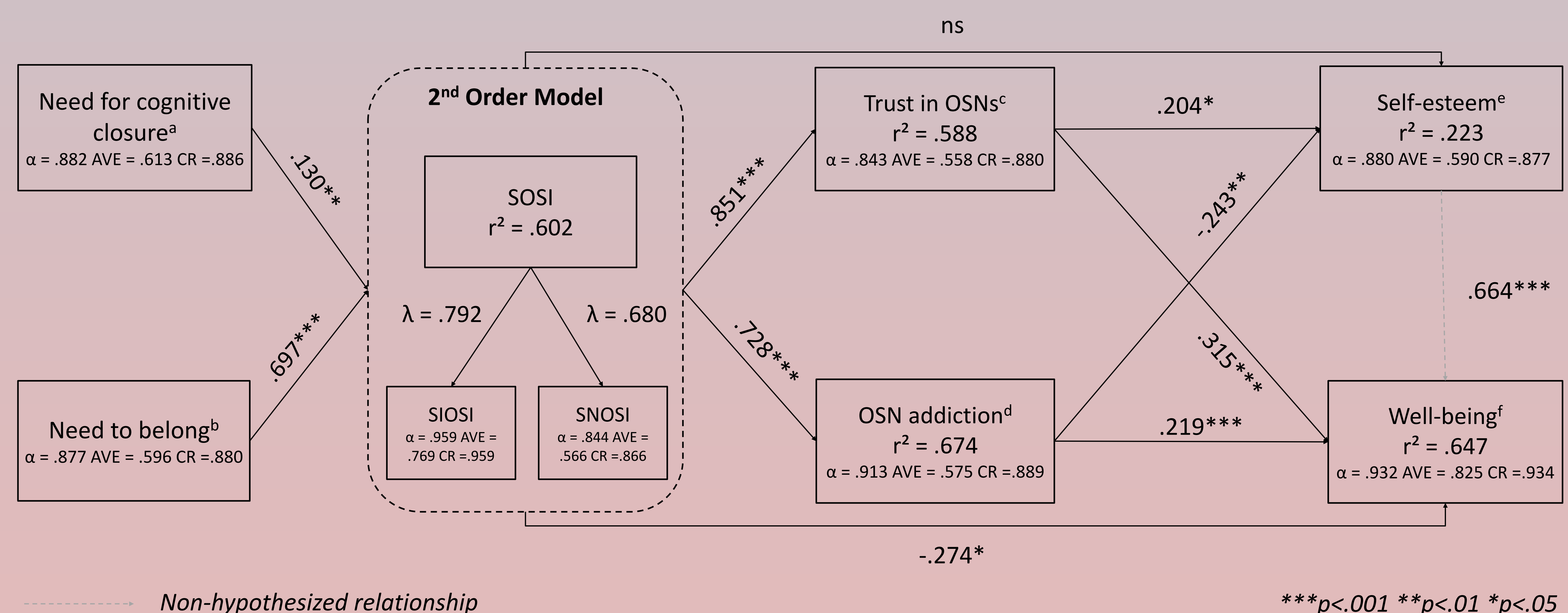
Discussion

Three studies showed initial support for the nomological validity and reliability of the SOSI scale.

Moreover, this research provides first evidence for the role of SOSI in research on the downsides of OSNs.

Further studies will focus on establishing the experimental validity of the scale. We expect that the SOSI scale will be used in diverse research on the impact of social media on human behavior.

References

References are available upon request.

Need for cognitive closure[a] · α = .882 AVE = .613 CR =.886

Need to belong[b] · α = .877 AVE = .596 CR=.880

2nd Order Model · SOSI r² = .602 · λ = .792 · λ = .680 · SIOSI α = .959 AVE = .769 CR =.959 · SNOSI α = .844 AVE = .566 CR =.866

Trust in OSNs[c] · r² = .588 · α = .843 AVE = .558 CR =.880

OSN addiction[d] · r² = .674 · α = .913 AVE = .575 CR =.889

Self-esteem[e] · r² = .223 · α = .880 AVE = .590 CR =.877

Well-being[f] · r² = .647 · α = .932 AVE = .825 CR =.934

ns · .130*** · .697*** · .851*** · .728*** · .204* · -.243** · .315*** · .219*** · .664*** · -.274*

------ *Non-hypothesized relationship*

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

Measurement model fit: $\chi^2(909)$=2183.207, RMSEA=.039, SRMR=.051, CFI=.939, TLI=.933
Path model fit: $\chi^2(1036)$=2589.711, RMSEA=.040, SRMR=.057, CFI=.929, TLI=.922

Notes. All relationships are controlled for social desirability bias and socio-demographics (age, gender, education). α = Cronbach's alpha; AVE = Average variance extracted; CR = Construct reliability; SOSI = Susceptibility to Online Social Influence; SIOSI = Susceptibility to *Informative* Online Social Influence; SNOSI = Susceptibility to *Normative* Online Social Influence. [a]Disatnik & Steinhart (2015), [b]Leary et al. (2013); [c]Everad & Galletta (2005); [d]Adreassen et al. (2012); [e]Robins et al. (2001); [f]Lyubormirsky & Lepper (1999)