

# Development and Psychometric Properties of the Social Network Site Use Motives Scale-Revised

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## ABSTRACT

**Background:** Social network site use motives have been reported to be important in understanding the causes of Social Network Site addiction. The purpose of this study was to supplement the weaknesses of the Social Network Site Use Motives Scale with a 6-factor structure and to examine the psychometric properties of the Social Network Site Use Motives Scale-Revised with an 8-factor structure.

**Methods:** Exploratory structural equation modeling and confirmatory factor analysis were used to investigate the factor structure of the Social Network Site Use Motives Scale-Revised. A Korean adult sample ( $n=661$ ,  $n_{\text{female}}=464$ , age:  $27.45 \pm 8.66$ ) filled out the Social Network Site Use Motives Scale-Revised.

**Results:** Results showed that an 8-factor model with exploratory structural equation modeling showed a better fit than the other models. Indices of internal consistency reliability of the Social Network Site Use Motives Scale-Revised were good. Also, the scale exhibited statistically significant positive correlations with social network site addiction scores, which showed adequate criterion validity. In addition, the expression motives and the concealment motives showed incremental validity of the Social Network Site Use Motives Scale-Revised by having a statistically significant relationship with social network site addiction even when controlling for the other 6 motives.

**Conclusion:** The Social Network Site Use Motives Scale-Revised, consisting of the 8 dimensions tapping information, enhancement, social, coping, pastime, conformity, expression, and concealment motives, is a reliable and valid scale to measure social network site use motives.

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## INTRODUCTION

A social networking site (SNS) including Facebook, Twitter, and Instagram is an online space for providing information to express oneself, communicating with colleagues and friends, and sharing common interests.<sup>1</sup> According to recent statistics, the number of SNS users worldwide in 2022 is 4.59 billion, and it is expected to reach 5.85 billion in 2027.<sup>2</sup> Social networking site addiction is excessive involvement in SNS, feeling the excessive motivation to access SNS, and investing excessive time and effort in SNS, which negatively affects one's social activities, work, interpersonal relationships, health, and well-being.<sup>3</sup> It should be noted that SNS addiction is not included in any diagnostic manuals. However, SNS addiction is widely recognized as a kind of behavioral addiction, such as gaming disorder or gambling disorder in the International Classification of Diseases 11th Revision. Social networking site addiction is composed of 6 components of behavioral addiction: salience, mood modification, conflict, withdrawal symptoms, tolerance, and relapse.<sup>1</sup>

It has been reported that SNS addiction can result in academic, occupational, social, and psychiatric impairments. According to prior research, SNS addiction has been linked to academic performance decrement,<sup>4</sup> burnout,<sup>5</sup> social and emotional loneliness,<sup>6</sup> eating disturbances,<sup>7</sup> and depression.<sup>8</sup> Considering the above problems related to SNS addiction, research is needed to find out the factors affecting the onset and maintenance of SNS addiction for prevention and intervention of SNS addiction.

Social networking site use motives have been reported to be important in understanding the causes of SNS addiction.<sup>9,10</sup> Social networking site use motives are reasons for SNS use formed through past experiences of SNS use; are proximal determinants of SNS use; and mediate environmental, situational, and intrapersonal antecedents and SNS use.<sup>9,10</sup> The SNS Use Motives Scale (SUMS)<sup>9</sup> was developed to assess 6 dimensions of SNS use motives: information motives (i.e., SNS use to acquire intellectual knowledge), enhancement motives (i.e., SNS use to boost positive emotion), social motives (i.e., SNS use to engage in social interaction),

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coping motives (i.e., SNS use to reduce negative emotion), pastime motives (i.e., SNS use to alleviate boredom), and conformity motives (i.e., SNS use to avoid social alienation). This model has been adapted from the substance use motives model.<sup>11</sup> Substance use motives can be described in 2 dimensions. One is related to the valence of reward (positive or negative), and the other is related to the source of reward (internal or external). Crossing these 2 dimensions yielded 4 use motives: enhancement, coping, social, and conformity motives. In addition, 2 use motives specific to SNS use and unrelated to substance use were included in the SUMS.

Besides the SUMS, several tools have been developed to measure SNS use motives. However, other measures have disadvantages compared to the SUMS. The Social Media Usage Aims Scale does not include coping motives, one of the most important use motives of social media.<sup>12</sup> Also, the Motivation for Social Media Use Measure does not contain enhancement motives to boost positive emotion.<sup>13</sup> In addition, the Motivations for Facebook Use do not contain conformity motives for not being excluded from a relationship.<sup>14</sup>

Despite its appeal for measuring SNS use motives, the original SUMS<sup>9</sup> needs to be modified, given that several studies on SNS use motives suggest that self-presentation motives should be in the dimensions of SNS use motives.<sup>15,16</sup> The self-presentation motives refer to the motivation to reveal one's strengths and hide one's weaknesses through SNS use. In this study, the former is called expression motives and the latter is called concealment motives. The 2 motives differ in valence. Expression motives refer to the use of SNS to obtain positive self-presentation. However, concealment motives refer to the use of SNS to avoid negative self-presentation.

The goal of the present study is (i) to revise the SUMS to incorporate a wider range of motives including expression motives and concealment motives and (ii) to evaluate whether the SUMS-R has proper psychometric properties including factorial validity, internal consistency, criterion validity, and incremental validity in the Korean population.

## MATERIAL AND METHODS

### Participants

Six hundred and sixty-one adults in Daegu, Korea, participated in this study, and the convenient sampling

method was used. The age of the participants ranged from 18 to 62 years (mean  $27.45 \pm 8.66$  years). Of the participants, 70.2% were female and 29.8% were male. Data in this study were obtained from 2 independent studies to examine the relationship between SNS use motives and SNS addiction.<sup>17,18</sup> Data collection was conducted online. Information on participants' psychiatric history, current diagnosis, and medications was not collected.

### Measures

**The Social Network Site Use Motives Scale-Revised:** The SUMS-R contains 8 reasons why people might be motivated to use SNS.<sup>9,10</sup> The scale consists of 40 items that are rated on a 5-point Likert-type scale (1=strongly disagree to 5=strongly agree). It is an expanded measure of SNS use motives and is thought to be a better measure to assess various aspects of SNS use motives as compared to the original SUMS. The SUMS-R was constructed to measure information, enhancement, social, coping, pastime, conformity, expression, and concealment motives. A two-step process was taken to create the items included in the SUMS-R's expression motives and concealment motives. The first step consisted of deductive and inductive item generation. In deductive item generation, items were created from the literature and previous scales related to SNS use motives and self-presentation. In inductive item creation, items were created through interviews with participants using SNS. In the second step, an expert panel on SNS addiction was asked to rate the representativeness and clarity of the generated items. The questionnaire was written in Korean.

**The Social Network Site Addiction Proneness Scale:** The Social Network Site Addiction Proneness Scale (SAPS) contains 24 items that measure SNS addiction.<sup>19</sup> The SAPS assesses 4 domains: (i) preoccupation and tolerance, (ii) virtual life orientation and withdrawal, (iii) avoidance of negative emotions, and (iv) disturbance of adaptive life and control failure. Each item is based on a 4-point Likert scale (ranging from 1=strongly disagree to 4=strongly agree). The Cronbach's  $\alpha$  of the SAPS reaches 0.92, indicating good internal consistency.<sup>19</sup>

### Data Analyses

Data analyses were conducted using Statistical Package for Social Sciences version 27.0 (IBM SPSS Corp.; Armonk, NY, USA) and Mplus v8.8 and a 2-tailed Type 1 error rate of 0.05 was used as the threshold for statistical significance. The factor structure was examined using models generated by confirmatory factor analysis (CFA) and exploratory structural equation modeling (ESEM). Many researchers believe that the CFA is not a suitable way to examine the factorial validity of a scale with a complex structure. On the other hand, the ESEM is regarded as a more flexible and powerful method than the CFA. In addition, in the

#### MAIN POINTS

- The Social Network Site Use Motives Scale-Revised (SUMS-R) consists of 8 dimensions: information, enhancement, social, coping, pastime, conformity, expression, and concealment motives.
- The SUMS-R is a reliable scale to measure social network site use motives.
- The SUMS-R is a valid scale to measure social network site use motives.

previous study that revealed the factor structure of the original SUMS, the ESEM performed better than the CFA.<sup>10</sup> Therefore, in this study, the CFA and ESEM were used together to examine the factor structure of the SUMS-R. The CFA and ESEM were performed using a maximum likelihood robust estimator. In the ESEM, an oblique target rotation procedure was used. Criteria-for-fit indices were displayed in Table 1.<sup>20</sup>

Four alternative models were compared with each other: (model 1) a 7-factor model with CFA; (model 2) a 7-factor model with ESEM; (model 3) an 8-factor model with CFA; and (model 4) an 8-factor model with ESEM. In 7-factor models (a 7-factor model with CFA and a 7-factor model with ESEM), all of the expression and concealment items were specified to load on self-presentation motives.

The previous study that measured self-presentation use motives did not distinguish between expression and concealment motives.<sup>14</sup> However, previous studies on use motives reported that approach and avoidance motives are distinguished.<sup>21</sup> Therefore, there is a possibility that self-presentation use motives can be divided into 2 factors of approach and avoidance motives. When self-presentation use motives can be divided into approach and avoidance motives, the SUMS-R will have 8 factors, but when self-presentation motives cannot be divided into approach and avoidance motives, the SUMS-R will have 7 factors.

Also, relative model fit was assessed using the Akaike information criterion (AIC), with smaller values indicating a better model fit to the data. A difference in AIC greater than 6 means that the model with a smaller AIC value shows a better fit.<sup>22</sup> For the correlation analysis in this study, Pearson's correlation coefficients were calculated. McDonald's omega and Cronbach's  $\alpha$  coefficients were used to measure the internal consistency of the factorized dimensions of SUMS-R. The traditional standard for these 2 coefficients is 0.70 or greater. Finally, hierarchical regression analyses were performed to evaluate whether expression motives and concealment motives significantly predicted SNS addiction over-and-above the variance accounted for by demographic variables and the other 6 use motives.

**Table 2.** Goodness-of-Fit Indices

Model	$\chi^2$	df	$\chi^2/df$	CFI	TLI	SRMR	RMSEA	90% CI	AIC
Seven-factor									
ESEM	1037.20	521	1.99	0.96	0.94	0.02	0.04	0.04-0.04	61 598.82
CFA	2716.18	719	3.78	0.85	0.84	0.08	0.07	0.06-0.07	63 306.37
Eight-factor									
ESEM	821.76	488	1.68	0.98	0.96	0.02	0.03	0.03-0.04	61 391.09
CFA	1571.75	712	2.21	0.94	0.93	0.06	0.04	0.04-0.05	61 884.33

AIC, Akaike information criteria;  $\chi^2$ , chi-square goodness-of-fit test; CFA, confirmatory factor analysis; CFI, comparative fit index; 90%CI=90% confidence interval; df, degree of freedom; ESEM, exploratory structural equation modeling; RMSEA, root mean square error of approximation; SRMR, standardized root mean square residual; TLI, Tucker-Lewis index.

**Table 1.** Criteria-for-Fit Indices

Fit Indices	Good Fit	Acceptable Fit
$\chi^2/df$	$\chi^2/df < 3$	$3 < \chi^2/df < 5$
CFI	$0.97 \leq CFI \leq 1$	$0.95 < CFI < 0.97$
TLI	$0.97 \leq TLI \leq 1$	$0.95 < TLI < 0.97$
SRMR	$0 \leq SRMR \leq 0.05$	$0.05 < SRMR < 0.10$
RMSEA	$0 < RMSEA < 0.05$	$0.05 < RMSEA < 0.08$

$\chi^2$ , chi-square goodness-of-fit test; CFI, comparative fit index; df, degree of freedom; RMSEA, root mean square error of approximation; SRMR, standardized root mean square residual; TLI, Tucker-Lewis index.

### Ethical Considerations

Prior to the survey, written consent was obtained from the participants. This study was approved by the Institutional Review Board of the Daegu University (Approval no. 1040621-202303-HR-E002).

### RESULTS

The Mardia's multivariate test was used to evaluate the multivariate normality of the data.<sup>23</sup> As a result of the Mardia's test, the data in this study were found to violate the multivariate normality. Therefore, in this study, an Maximum likelihood with robust standard errors (MLR) estimation method that is not affected by multivariate normality was used.

Table 2 shows the fit indices for CFA and ESEM. As shown in Table 2, the comparative fit index (CFI) and Tucker-Lewis index (TLI) values for the 7-factor model with CFA indicated poor fit, and the root mean square error of approximation (RMSEA), root mean square error of approximation (SRMR), and  $\chi^2/df$  values indicated acceptable fit. For the 8-factor CFA, the CFI and TLI values indicated poor fit, the SRMR value indicated acceptable fit, and the RMSEA and  $\chi^2/df$  values indicated good fit. For the 7-factor ESEM, the TLI value indicated poor fit, the CFI value indicated acceptable fit, and the RMSEA, SRMR, and  $\chi^2/df$  values indicated good fit. For the 8-factor ESEM, the TLI value indicated an acceptable fit and the CFI, RMSEA, SRMR, and  $\chi^2/df$  values indicated a good fit.

**Table 3.** Parameter Estimates Based on the Confirmatory Factor Analysis and Exploratory Structural Equation Modeling Solutions

Item	CFA <sup>a</sup>	ESEM Factor I	Factor II	Factor III	Factor IV	Factor V	Factor VI	Factor VII	Factor VIII
1	<b>0.56</b>	<b>0.53</b>	--0.01	0.16	-0.01	0.02	-0.08	-0.01	-0.01
9	<b>0.52</b>	<b>0.57</b>	0.10	-0.12	0.07	-0.23	0.07	0.02	0.06
17	<b>0.72</b>	<b>0.63</b>	0.03	0.10	-0.04	0.08	0.03	-0.02	0.00
25	<b>0.78</b>	<b>0.74</b>	0.05	-0.04	-0.02	-0.01	0.03	0.06	-0.02
33	<b>0.64</b>	<b>0.66</b>	-0.07	-0.13	0.07	0.12	-0.01	0.06	0.03
2	<b>0.67</b>	0.05	<b>0.53</b>	0.22	0.05	0.09	-0.10	-0.12	-0.07
10	<b>0.70</b>	0.25	<b>0.53</b>	0.07	-0.09	0.07	0.01	-0.02	-0.05
18	<b>0.76</b>	-0.02	<b>0.76</b>	-0.00	0.09	-0.05	0.06	0.04	-0.04
26	<b>0.79</b>	-0.01	<b>0.78</b>	-0.00	0.00	0.07	-0.04	-0.01	-0.01
34	<b>0.64</b>	-0.07	<b>0.68</b>	-0.11	0.05	0.02	-0.02	0.10	0.15
3	<b>0.64*</b>	0.01	-0.02	<b>0.61</b>	0.06	0.10	-0.05	0.06	0.02
11	<b>0.77</b>	0.03	0.06	<b>0.73</b>	0.01	0.00	0.08	-0.03	0.03
19	<b>0.72</b>	-0.03	0.04	<b>0.57</b>	0.03	0.00	-0.07	0.26	0.03
27	<b>0.82</b>	0.01	0.06	<b>0.56</b>	0.03	-0.05	0.24	0.10	0.00
35	<b>0.68</b>	0.00	0.14	0.29	0.06	-0.11	0.25	0.12	0.13
4	<b>0.75</b>	0.06	0.16	0.10	<b>0.63</b>	0.06	-0.06	-0.14	0.09
12	<b>0.79</b>	-0.03	0.05	-0.02	<b>0.73</b>	-0.05	0.13	-0.02	0.00
20	<b>0.83</b>	0.07	-0.06	0.07	<b>0.84</b>	0.06	-0.07	-0.01	0.00
28	<b>0.83</b>	0.03	-0.07	0.02	<b>0.83</b>	0.04	-0.01	0.04	-0.00
36	<b>0.82</b>	-0.06	0.05	-0.08	<b>0.82</b>	-0.02	0.05	0.08	-0.04
5	<b>0.73</b>	0.02	0.05	0.06	0.01	<b>0.68</b>	0.03	-0.07	0.09
13	<b>0.84</b>	0.01	0.02	0.03	-0.02	<b>0.84</b>	-0.02	-0.06	0.08
21	<b>0.86</b>	0.02	-0.03	0.02	0.06	<b>0.84</b>	0.02	-0.01	0.02
29	<b>0.81</b>	0.00	0.07	-0.02	-0.04	<b>0.78</b>	0.03	0.06	-0.05
37	<b>0.76</b>	-0.03	0.08	-0.13	0.12	<b>0.70</b>	0.08	0.11	-0.10
6	<b>0.74</b>	-0.04	0.04	-0.04	0.03	-0.04	<b>0.68</b>	-0.04	0.16
14	<b>0.81</b>	0.02	-0.04	0.22	0.06	0.05	<b>0.72</b>	-0.06	-0.05
22	<b>0.82</b>	0.06	-0.11	-0.01	0.15	0.01	<b>0.70</b>	0.05	0.04
30	<b>0.89</b>	0.05	-0.00	0.05	-0.04	0.06	<b>0.86</b>	-0.00	0.01
38	<b>0.87</b>	-0.01	0.07	0.01	-0.05	0.05	<b>0.83</b>	0.07	0.01
7	<b>0.80</b>	0.07	0.00	0.05	0.11	-0.05	-0.01	<b>0.74</b>	-0.01
15	<b>0.85</b>	0.00	-0.06	0.08	0.04	-0.02	-0.00	<b>0.75</b>	0.11
23	<b>0.87</b>	-0.01	0.02	0.08	-0.00	-0.01	0.09	<b>0.75</b>	0.03
31	<b>0.84</b>	0.04	-0.02	0.11	-0.02	0.03	0.02	<b>0.67</b>	0.14
39	<b>0.69</b>	0.07	0.13	0.05	-0.08	0.11	-0.03	<b>0.69</b>	-0.07
8	<b>0.63</b>	-0.03	0.03	-0.00	0.01	0.12	0.05	0.27	<b>0.43</b>
16	<b>0.86</b>	-0.01	0.00	0.04	0.02	-0.02	0.04	0.04	<b>0.78</b>
24	<b>0.91</b>	-0.01	-0.02	0.05	0.05	0.03	-0.06	-0.05	<b>0.94</b>
32	<b>0.89</b>	0.05	0.00	0.00	-0.02	-0.01	0.07	-0.02	<b>0.87</b>
40	<b>0.86</b>	0.03	0.01	-0.03	0.02	-0.02	0.01	-0.01	<b>0.86</b>

CFA, confirmatory factor analysis; ESEM, exploratory structural equation modeling; Factor I, information motives; Factor II, enhancement motives; Factor III, social motives; Factor IV, coping motives; Factor V, pastime motives; Factor VI, conformity motives; Factor VII, expression motives; Factor VIII, concealment motives.

Factor values > 0.30 are shown in boldface.

<sup>a</sup>Each item loaded on its respective factor and no cross-loadings were allowed.

**Table 4.** Factor Correlations

	1	2	3	4	5	6	7	8
1. Information motives	-	0.552 (<.001)	0.350 (<.001)	0.245 (<.001)	0.344 (<.001)	0.179 (<.001)	0.265 (<.001)	0.115 (.015)
2. Enhancement motives	0.628 (<.001)	-	0.405 (<.001)	0.436 (<.001)	0.521 (<.001)	0.219 (<.001)	0.290 (<.001)	0.133 (.006)
3. Social motives	0.433 (<.001)	0.499 (<.001)	-	0.252 (<.001)	0.315 (<.001)	0.530 (<.001)	0.564 (<.001)	0.292 (<.001)
4. Coping motives	0.319 (<.001)	0.490 (<.001)	0.435 (<.001)	-	0.335 (<.001)	0.520 (<.001)	0.286 (<.001)	0.507 (<.001)
5. Pastime motives	0.408 (<.001)	0.612 (<.001)	0.356 (<.001)	0.427 (<.001)	-	0.103 (.012)	0.146 (<.001)	0.000 (.999)
6. Conformity motives	0.274 (<.001)	0.279 (<.001)	0.735 (<.001)	0.568 (<.001)	0.229 (<.001)	-	0.477 (<.001)	0.633 (<.001)
7. Expression motives	0.365 (<.001)	0.351 (<.001)	0.761 (<.001)	0.373 (<.001)	0.226 (<.001)	0.596 (<.001)	-	0.535 (<.001)
8. Concealment motives	0.181 (<.001)	0.154 (<.001)	0.498 (<.001)	0.539 (<.001)	0.081 (.063)	0.673 (<.001)	0.610 (<.001)	-

Correlations above the diagonal are obtained from an exploratory structural equation modeling solution. Correlations below the diagonal are obtained from a confirmatory factor analysis solution. *P*-values are indicated in parentheses.

The relative model fit was examined using AIC. The 8-factor CFA model (model 3) had a better fit than the 7-factor CFA model (model 1) ( $\Delta$ AIC = -1422.04). The 7-factor ESEM (model 2) had a superior fit to the 8-factor CFA (model 3) ( $\Delta$ AIC = -285.52). Also, the fit of the 8-factor ESEM (model 4) was better than the 7-factor ESEM (model 2) ( $\Delta$ AIC = -8.63). The 8-factor ESEM showed a better fit than the other competing models. These findings not only indicated that the ESEM gave a better picture of the structure than did the CFA but also 8-factor models provided a more accurate description of the data than did the 7-factor models.

Table 3 shows the standardized factor loadings of the 8-factor models of the SUMS-R. A cut-off for factor loadings was set at 0.30. In the 8-factor CFA, all 40 items had salient loadings on their hypothesized factors. In the 8-factor ESEM, 39 items showed salient loadings on their

target factors, and only 1 item showed weakly salient loading on the target factor. Also, in the 8-factor ESEM, all 8 factors showed no items with non-target loadings greater than 0.30.

As shown in Table 4, the factor correlations of the 8-factor ESEM are lower than those of the 8-factor CFA. These results show that the 8-factor ESEM exhibits distinctiveness between factors better than the 8-factor CFA. Considering that the 8-factor ESEM had weaker factor correlations and better model-fit indices than the 8-factor CFA, it is believed that ESEM provides a better solution than CFA for SUMS-R.

The results of the criterion validity by examining the correlation coefficient between the 8 factors of the SUMS-R and SNS addiction are presented in Table 5. The correlation between the SUMS-R's 8 factors and the SNS addiction

**Table 5.** Correlations, Means, Standard Deviations, and Reliability Coefficients

	1	2	3	4	5	6	7	8	9
1. Information motives	-								
2. Enhancement motives	0.509 (<.001)	-							
3. Social motives	0.350 (<.001)	0.435 (<.001)	-						
4. Coping motives	0.286 (<.001)	0.446 (<.001)	0.390 (<.001)	-					
5. Pastime motives	0.327 (<.001)	0.539 (<.001)	0.321 (<.001)	0.398 (<.001)	-				
6. Conformity motives	0.230 (<.001)	0.246 (<.001)	0.639 (<.001)	0.525 (<.001)	0.207 (<.001)	-			
7. Expression motives	0.326 (<.001)	0.336 (<.001)	0.682 (<.001)	0.333 (<.001)	0.227 (<.001)	0.529 (<.001)	-		
8. Concealment motives	0.181 (<.001)	0.177 (<.001)	0.471 (<.001)	0.501 (<.001)	0.104 (.008)	0.639 (<.001)	0.583 (<.001)	-	
9. SA	0.253 (<.001)	0.414 (<.001)	0.453 (<.001)	0.683 (<.001)	0.399 (<.001)	0.511 (<.001)	0.458 (<.001)	0.569 (<.001)	-
Mean	17.75	17.92	14.72	12.78	18.75	11.39	13.51	10.41	50.51
SD	3.56	3.30	4.45	4.94	4.32	4.76	4.99	4.51	13.91
McDonald's omega	0.78	0.84	0.85	0.90	0.90	0.92	0.91	0.92	0.94
Cronbach's alpha	0.78	0.83	0.84	0.90	0.90	0.91	0.91	0.91	0.94

SA, social networking site addiction; SD, standard deviation. *P*-values are indicated in parentheses.



(information:  $r=0.253, P < .001$ ; enhancement:  $r=0.414, P < .001$ ; social:  $r=0.453, P < .001$ ; coping:  $r=0.683, P < .001$ ; pastime:  $r=0.399, P < .001$ ; conformity:  $r=0.511, P < .001$ ; expression:  $r=0.458, P < .001$ ; concealment:  $r=0.569, P < .001$ ) were statistically significant.

Internal consistency tests yielded a McDonald's omega of 0.78 for the information motives, 0.84 for the enhancement motives, 0.85 for the social motives, 0.90 for the coping motives, 0.90 for the pastime motives, 0.92 for the conformity motives, 0.91 for the expression motives, and 0.92 for the concealment motives. All McDonald's omegas exceeded the cut-off of 0.70 (Table 5). Internal consistency tests yielded a Cronbach's  $\alpha$  of 0.78 for the information motives, 0.83 for the enhancement motives, 0.84 for the social motives, 0.90 for the coping motives, 0.90 for the pastime motives, 0.91 for the conformity motives, 0.91 for the expression motives, and 0.91 for the concealment motives. All Cronbach's  $\alpha$ s exceeded the recommended cut-off of 0.70 (Table 5).

As shown in Table 6, 3-step hierarchical regression analyses were performed to determine the separate contribution of demographic variables, 6 use motives of the original SUMS, and expression and concealment motives to the prediction of SNS addiction. Gender and age were entered in Step 1, 6 use motives of the original SUMS were entered in Step 2, and expression and concealment motives were entered in Step 3. A statistically significant increment in  $R^2$  at Step 3 indicates incremental validity for expression and concealment motives.

**DISCUSSION**

The findings of the current study showed that the 8-factor models yielded considerably better fit than the 7-factor

models. These results are in line with previous research showing that revealing one's strengths and hiding one's weaknesses are distinct methods of self-presentation.<sup>24</sup> Also, the results of this study are consistent with previous studies showing that use motives can be divided into approach and avoidance motives.<sup>21</sup> In addition, the current study revealed that a better fit to the data was obtained in ESEM than in CFA. These results are similar to those of the previous studies comparing the fitness of ESEM and CFA with measures of SNS use motives.<sup>10</sup>

The reason ESEM showed a better model fit than CFA in this study is that ESEM made cross-loadings as close to zero as possible but did not limit them to zero. These findings lead researchers examining SUMS-R to use ESEM instead of CFA. If the model fit of the research model including SUMS-R not using ESEM but using CFA is inadequate, there is a possibility that the research model to be adopted when ESEM is used may be rejected.

Another consequence of using only CFA and not ESEM when examining SUMS-R is high factor correlations. Prior studies on SNS use motives showed higher factor correlations when using CFA than when using ESEM.<sup>10,25</sup> High correlations between factors cause 2 problems. The first problem is that multicollinearity can occur when highly correlated factors are included in the analysis together. In general, it has been reported that the problem of multicollinearity exists when the correlation between factors is over 0.70.<sup>26</sup> The highest inter-factor correlation in the ESEM analysis of this study was 0.63, so the problem of multicollinearity was resolved. Another problem of high factor correlations is the violation of discriminant validity. Exploratory structural equation modeling analysis of this study showed that the 2 factors (expression and concealment motives) which were added to SUMS-R are not redundant and showed adequate discriminant validity.

This study has several limitations. First, the tools used in this study are all self-report questionnaires. Therefore, there is a possibility that it has the problem of inflated correlations that can occur because only the same format tool is used. Second, this study only used data from a relatively narrow area. Therefore, caution is needed when applying the findings of the present study to other samples. Third, only normal adults participated in the study. Different findings may be obtained when clinical samples are included because items of the SUMS-R could be perceived differently by SNS addicts. Therefore, follow-up studies with SNS addicts as participants are needed. Lastly, the higher proportion of female participants than male participants may limit the generalizability of the results of this study.

Despite these limitations, the results demonstrated the factorial validity of the 8-factor SUMS-R. In addition, the results showed that the SUMS-R had good internal consistency, criterion validity, and incremental validity. The use of SUMS-R will contribute to clarifying the function of SNS use motives in the relationship between

**Table 6.** Incremental Contributions of Expression and Concealment Motives to Social Networking Site Addiction

Variable	B	SE B	P
Step 1			
Gender	-3.42	1.18	.004
Age	-0.06	0.06	.335
Step 2			
Information motives	-0.12	0.12	.340
Enhancement motives	0.28	0.16	.079
Social	0.35	0.12	.004
Coping motives	1.41	0.10	<.001
Pastime motives	0.33	0.11	.003
Conformity motives	0.44	0.12	<.001
Step3			
Expression motives	0.26	0.11	.016
Concealment motives	0.80	0.12	<.001

$R^2 = 0.01$  for step 1 ( $P = .009$ ),  $\Delta R^2 = 0.52$  for step 2 ( $P < .001$ ),  $\Delta R^2 = 0.05$  for step 3 ( $PP < .001$ ). B: unstandardized beta; SE B: standard error of unstandardized beta.

environmental, situational, and intrapersonal factors and SNS addiction in future research.

**Ethics Committee Approval:** This study was approved by the Institutional Review Board of Daegu University (Approval no. 1040621-202303-HR-E002).

**Informed Consent:** Written informed consent was obtained from the participants.

**Peer-review:** Externally peer-reviewed.

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