Problematic Social Network Sites Use: Scale Development, Neurocognitive Profiles, and Psychosocial Implications

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BACKGROUNDS

- The rapid adoption of **SNSs among university students** has raised concerns about their neurological, cognitive, and psychosocial well-being.
- Despite growing awareness, there is a lack of standardized assessment tools to measure **problematic SNS use (PSNSU)**.
- This study aimed to:

  (1) **develop and validate a robust PSNSU scale** with a precise cutoff score to distinguish problematic users, and

  (2) examine the **neural correlates** and behavioral pathways through which PSNSU relates to **executive function (EF), lifestyle patterns, psychosocial health, and quality of life** (QoL).

METHODS

Scale Development

Neural & Behavioral Assessment

fNIRS & EF testing

Lifestyle Survey

Psychosocial Health & QoL Survey

Phase 1. Scale Development and Validation (PSNSU-II)

- **Participants**: Korean SNS users aged 18–39 years (N = 254)
- **Item pool**: Initial 42-item PSNSU, 5-point Likert scale
- **Factor structure**: Random split sample for EFA (n = 123) and CFA (n = 131)
- **Psychometric evaluation**: Item analysis → EFA/CFA → convergent validity with BSMAS
- **Cutoff determination**: Latent profile analysis (LPA) → ROC (criterion: BSMAS) → Youden index

Phase 2. Neurobehavioral Pathway Study

- **Participants:** Digital native SNS users aged 18–29 years (N = 104), Korea
- **Sampling/Grouping**: Convenience sampling / Classified by the PSNSU cutoff score
- **Measures:** PFC connectivity: fNIRS Lifestyle: Yonsei Lifestyle Profile–ABCD (YLP-ABCD)

  EF: Frontal Assessment Battery Psychosocial health & QoL: WHOQOL-BREF
- **Statistical analysis**: Path analysis including moderated mediation by EF

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RESULTS

Phase 1. Scale Development and Validation (PSNSU-II)

- **Four-factor structure (24 items)**

  ① Addictive Behaviors (8 items) ② Emotion-driven Use (4 items)

  ③ Health Issues (6 items) ④ Interpersonal Problems (6 items).

- **Psychometric properties**

  The final 24-item model showed acceptable fit (CFI = .87, RMSEA = .09), high reliability (α = .95), and strong convergent validity (r = .73, p < .001).

- **Cut-off score**

  An empirically derived cut-off of ≥63 demonstrated good discrimination (sensitivity = .84; specificity = .75).

PSNSU-II

Phase 2. Neurobehavioral Pathway Study

✓ **Prefrontal Functional Connectivity (fNIRS)**

- Problematic users showed **stronger functional connectivity** between:

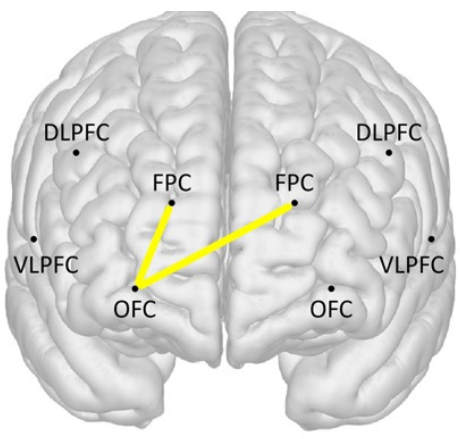
- Right OFC – Left FPC (p < .05); Right OFC – Right FPC (p < .05)

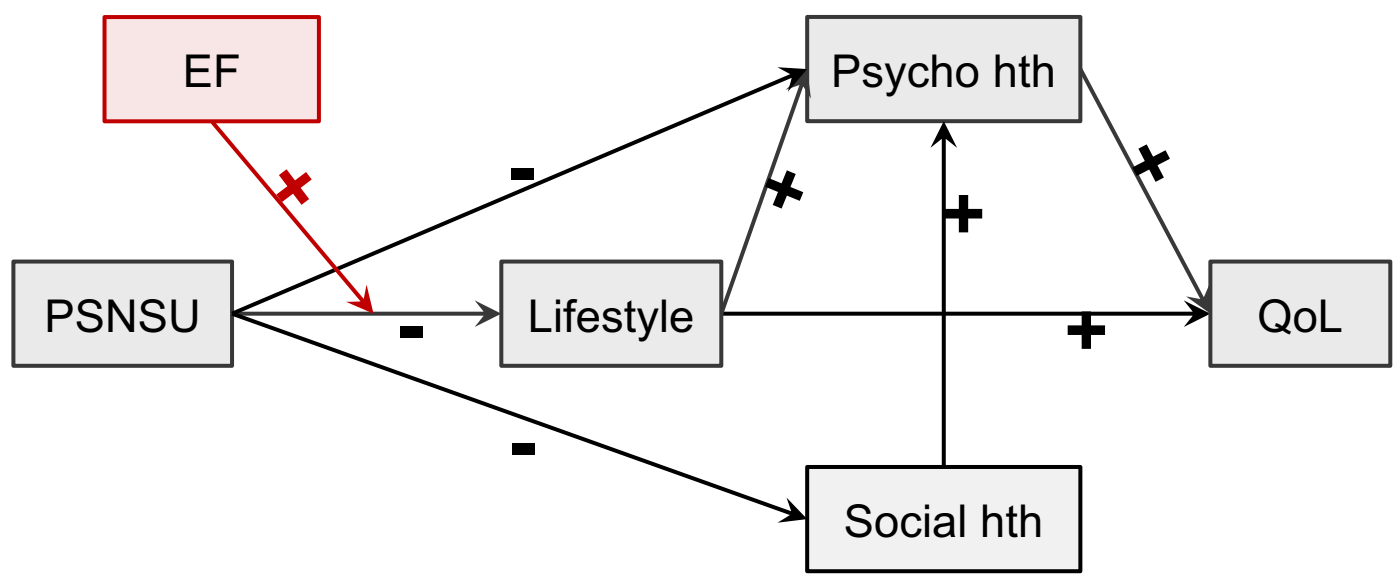
✓ **Path Analysis**

- PSNSU negatively affected QoL through lifestyle and psychological health

- EF buffered this pathway by moderating the PSNSU → lifestyle link

  (resulting in weaker indirect effects at higher EF levels)





CONCLUSION

- This study developed a reliable PSNSU scale and found that problematic SNS use is associated with neural-cognitive changes, as well as poorer lifestyle and QoL.
- Findings highlight PSNSU's neurological and psychosocial risks, emphasizing the need for structured OT strategies.

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