Social Media Use and Self-Perceived Popularity in Early Adolescents: Bidirectional Effects and Impact on Psychological Adjustment

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Perceived Popularity

Reputation of visibility and dominance within the peer hierarchy

... vs. sociometric popularity or likeability

Coie et al., 1982; Parkhurst & Hopmeyer, 1998
Transformation Framework: Social Media Alters Peer Status Processes

Social media use may amplify awareness of and desire for perceived popularity

Asynchrony

Accessibility

Publicness

Status-Seeking

Nesi, Choukas-Bradley, & Prinstein, 2018
Social media use may heighten perceived popularity concerns and demands.

**Quantifiable Status Information**

<table>
<thead>
<tr>
<th>Likes</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>137</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>73</td>
</tr>
<tr>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Pressure to Maintain or Increase Popularity**

- Novel content
- Social connections
- Staying “in the loop”
- Drama
- Cyberaggression

*Nesi, Choukas-Bradley, & Prinstein, 2018*
Transformation Framework: Social Media, Perceived Popularity, and Psychological Adjustment

Internalizing Problems

Perceived Popularity

Anxiety / Depressive Symptoms

Low Social Media Use

High Social Media Use

Externalizing Problems

Perceived Popularity

Substance Use / Delinquent Behaviors

Low Social Media Use

High Social Media Use

Nesi, Choukas-Bradley, & Prinstein, 2018
Research on Social Media Use and Popularity in Adolescents

• More frequent social media use is associated with a greater desire for popularity

• 37-43% feel pressure to post content that will
  - Make themselves look good
  - Receive many likes and comments

• Higher peer-perceived popularity is linked to more frequent
  - Social media use
  - Number of likes and photos with peers
  - Technology-mediated social comparison and feedback seeking
  - Digital status seeking

Nesi & Prinstein, 2015, 2018; Pew Research Center, 2015; Przybylski et al., 2013
Research on Social Media Use, Popularity, and Psychological Adjustment in Adolescents

- More frequent technology-mediated social comparison and feedback seeking predicted greater depressive symptoms
  - Stronger among those low in popularity

- Greater digital status seeking predicted higher levels of substance use and sexual risk behaviors

Nesi & Prinstein, 2015, 2018
Role of Gender

Girls
- Appearance
- Stress (low/high)
- Anxiety (low/high)
- Instagram/Snapchat
  - Posting photos
  - Social comparison
  - Feedback seeking
- Cyberaggression

Boys
- Athletic ability
- Toughness
- Physical aggression (low/high)
- Binge drinking (high)
- Videogames
  - Entertainment
  - Posting funny videos

Perceived Popularity
- Social abilities
- Relational aggression
- Depressive symptoms (low)
- Alcohol consumption (high)
- Delinquent behaviors (high)

Social Media Use
- Pressure to post popular content
- Digital status seeking
- Links to risk behavior

Balsa et al., 2011; Rose, Glick, & Smith, 2011; Stoltz et al., 2016; Troop-Gordon, 2014; Wright, 2017
Study Objectives

1. Examine the bidirectional relationships between social media use and perceived popularity among early adolescents

2. Evaluate whether social media use moderates the relationship between perceived popularity and risk for psychological adjustment problems

3. Investigate gender differences
Participants

• 1,345 early adolescents (11-14 years; 51% girls)

• Participating in the PANDA Project (longitudinal study examining predictors of anxiety and depression in adolescence)

Racial/Ethnic Background

- Non-Hispanic White: 51%
- Black or African American: 21%
- Hispanic or Latinx: 15%
- Asian: 9%
- Multi-Racial/Ethnic: 3%
- Other: 1%

Parental Education

- Less than high school: 9%
- High school: 28%
- 2 years of college or trade school: 25%
- 4 years of college: 32%
- Graduate / medical / law school: 6%
PANDA Project Recruitment

Schools
- Grades 7 and 8
- 5 public middle schools
- Rural, suburban, and urban

Student Population
- 48% free or discounted lunch
- 9% English language learners

Measures

Perceived Popularity

- Subjective Social Status Scale
  - Sense of place within the peer hierarchy
  - Strong, positive association with peer-perceived popularity ($\eta^2 = .27$)
  - Large, positive correlations with self-perceptions of being powerful, respected, and attractive ($r_s = .60-.72$)

Sweeting, West, Young, & Kelly, 2011; Sweeting & Hunt, 2015
Measures

Social Media Use

• Average frequency of using Instagram and Snapchat

Never (0)  Less than once a week (1)  Once a week (2)  Several times a week (3)  Once a day (4)  Several times a day (5)  Once an hour (6)  Several times an hour (7)  Almost constantly (8)

Ohannessian, 2009; Pew Research Center, 2018
<table>
<thead>
<tr>
<th>Construct</th>
<th>Measure</th>
<th>Sample Item</th>
<th>Scale</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety Symptoms</td>
<td>Screen for Child Anxiety Related Disorders (SCARED)</td>
<td><em>I am nervous</em></td>
<td>SCARED Total Score</td>
<td>.94-.95</td>
</tr>
<tr>
<td>Depressive Symptoms</td>
<td>Center for Epidemiological Studies, Scale for Depression in Children (CES-DC)</td>
<td><em>I feel sad</em></td>
<td>CES-DC Total Score</td>
<td>.91-.93</td>
</tr>
<tr>
<td>Total Alcohol Consumption</td>
<td>Alcohol use in the past 6 months</td>
<td><em>How often did you drink alcohol in the last 6 months?</em></td>
<td>Quantity x Frequency</td>
<td>--</td>
</tr>
<tr>
<td>Delinquent Behaviors</td>
<td>Problem Behaviors Survey (PBS)</td>
<td><em>In the last 6 months, how often did you start physical fights?</em></td>
<td>PBS Average Total Score</td>
<td>.95-.96</td>
</tr>
</tbody>
</table>

*Birmaher et al., 1999; Gault-Sherman, 2013; Ohannessian, 2009; Weissman, Orvashel, & Padian, 1980*
Analytic Plan

Objective 1: Bidirectional Relationships
• Cross-lagged autoregressive path model
  - Self-perceived popularity and social media use (T1, T2, T3)

Objective 2: Social Media Use as a Moderator
• Path model
  - IVs (T1): popularity, social media use, social media x popularity interaction
  - DVs (T3): anxiety symptoms, depressive symptoms, total alcohol consumption, delinquent behaviors

Objective 3: Gender Differences
• Multiple group analysis
  - Grouping variable: gender (girls vs. boys)
  - Chi-square difference tests

Byrne, 2009; Kline, 2015; Vandenbarg & Lance, 2000
Social Media Use

![Diagram showing Social Media Use](image)

- **Instagram Use (%)**
  - T1: Girls 70, Boys 60
  - T2: Girls 75, Boys 65
  - T3: Girls 80, Boys 70

- **Snapchat Use (%)**
  - T1: Girls 80, Boys 70
  - T2: Girls 85, Boys 75
  - T3: Girls 90, Boys 80
Objective 1: Bi-Directional Relationships
### Multiple Group Analysis by Gender

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$\Delta \chi^2$</th>
<th>$\Delta$ df</th>
<th>$p$ value</th>
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</thead>
<tbody>
<tr>
<td>Unconstrained</td>
<td>64.7</td>
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<tr>
<td>Structural Weights</td>
<td>95.9</td>
<td>34</td>
<td>31.2</td>
<td>20</td>
<td>.06</td>
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<tr>
<td>Structural Intercepts</td>
<td>141.2</td>
<td>38</td>
<td>76.5</td>
<td>24</td>
<td>&lt; .001</td>
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<tr>
<td>Structural Means</td>
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<td>43</td>
<td>193.2</td>
<td>29</td>
<td>&lt; .001</td>
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<tr>
<td>Structural Covariances</td>
<td>271.9</td>
<td>55</td>
<td>207.2</td>
<td>41</td>
<td>&lt; .001</td>
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<tr>
<td>Structural Residuals</td>
<td>290.5</td>
<td>61</td>
<td>225.8</td>
<td>47</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>
Path Model for Full Sample

χ² (34) = 98.85, p < .001; CFI = .98; TLI = .97; RMSEA = .04 (.03, .05)

Not shown: covariances, residual variances, and covariates (T1 age, race/ethnicity, perceived socioeconomic status). * p < .05; ** p < .01; *** p < .001
Objective 2: Social Media Use as a Moderator
## Multiple Group Analysis by Gender

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$\Delta \chi^2$</th>
<th>$\Delta$ df</th>
<th>$p$ value</th>
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</thead>
<tbody>
<tr>
<td>Unconstrained</td>
<td>127.7</td>
<td>30</td>
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<tr>
<td>Structural Weights</td>
<td>205.1</td>
<td>66</td>
<td>77.4</td>
<td>36</td>
<td>&lt; .001</td>
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<tr>
<td>Structural Intercepts</td>
<td>249.1</td>
<td>70</td>
<td>121.4</td>
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<td>Structural Means</td>
<td>495.2</td>
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<td>367.5</td>
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<tr>
<td>Structural Covariances</td>
<td>917.4</td>
<td>157</td>
<td>789.6</td>
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<td>&lt; .001</td>
</tr>
<tr>
<td>Structural Residuals</td>
<td>991.8</td>
<td>167</td>
<td>864.1</td>
<td>137</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>
Path Model for Girls

Social Media Use → Anxiety Symptoms
Self-Perceived Popularity → Depressive Symptoms
Self-Perceived Popularity² → Total Alcohol Consumption
Social Media Use x Popularity → Delinquent Behaviors
Social Media Use x Popularity² → Anxiety Symptoms

$\chi^2 (30) = 127.7, p < .001; \text{CFI} = .99; \text{TLI} = .98; \text{RMSEA} = .05 (.04, .06)$

Not shown: covariances, residual variances, and covariates (T1 age, race/ethnicity, perceived socioeconomic status, psychological adjustment). * $p < .05$; ** $p < .01$; *** $p < .001$
Path Model for Girls

$\chi^2 (30) = 127.7, p < .001; \text{CFI} = .99; \text{TLI} = .98; \text{RMSEA} = .05 (.04, .06)$

Not shown: covariances, residual variances, and covariates (T1 age, race/ethnicity, perceived socioeconomic status, psychological adjustment). * $p < .05$; ** $p < .01$; *** $p < .001$
Social Media as a Moderator for the Relationship Between Self-Perceived Popularity and Anxiety in Girls

![Graph showing the relationship between self-perceived popularity and anxiety symptoms (T3) with low and high social media use (T1). The graph illustrates that high social media use is associated with higher anxiety symptoms at T3, especially among those with lower self-perceived popularity at T1.](image-url)
Social Media as a Moderator for the Relationship Between Self-Perceived Popularity and Delinquent Behaviors in Girls

![Graph showing the relationship between self-perceived popularity and delinquent behaviors](image)
Path Model for Boys

χ² (30) = 127.7, p < .001; CFI = .99; TLI = .98; RMSEA = .05 (.04, .06)

Not shown: covariances, residual variances, and covariates (T1 age, race/ethnicity, perceived socioeconomic status, psychological adjustment). * p < .05; ** p < .01; *** p < .001
Path Model for Boys

\[ \chi^2 (30) = 127.7, \ p < .001; \ CFI = .99; \ TLI = .98; \ RMSEA = .05 (0.04, 0.06) \]

Not shown: covariances, residual variances, and covariates (T1 age, race/ethnicity, perceived socioeconomic status, psychological adjustment). * \( p < .05; \) ** \( p < .01; \) *** \( p < .001 \)
Social Media as a Moderator for the Relationship Between Self-Perceived Popularity and Anxiety in Boys

![Graph showing the relationship between self-perceived popularity and anxiety symptoms with social media use as a moderator. The graph indicates that high social media use is associated with higher anxiety symptoms, while low social media use is associated with lower anxiety symptoms, controlling for self-perceived popularity.](image-url)
Social Media as a Moderator for the Relationship Between Self-Perceived Popularity and Depressive Symptoms in Boys

![Graph showing the relationship between Depressive Symptoms (T3) and Self-Perceived Popularity (T1, ± 1 SD) for low and high social media use. The graph indicates that high social media use is associated with higher depressive symptoms at T3, compared to low social media use.]
Social Media as a Moderator for the Relationship Between Self-Perceived Popularity and Alcohol Consumption in Boys
Social Media as a Moderator for the Relationship Between Self-Perceived Popularity and Delinquent Behaviors in Boys

![Graph showing the relationship between self-perceived popularity and delinquent behaviors with social media use as a moderator.](image-url)
Summary and Discussion

- Support for transformation framework
- Extends cross-sectional findings in older adolescents
- Quantifiable reinforcement
  - Status seeking behaviors
  - Cyberaggression
- Social enhancement hypothesis (“rich get richer”)

Kraut, 2003; Nesi, Choukas-Bradley, & Prinstein, 2018; Nesi & Prinstein, 2015, 2018; Sherman et al., 2016, 2018a, 2018b
Summary and Discussion

Perceived Popularity

Low

(Girls and Boys)

Low Popularity

- Reassurance seeking
- Online victimization
- Implicit negative reactions to popular peers

Common Mechanisms

- Social comparison
- Peer status worries
- Fears of missing out

High Popularity

(Girls)

High Popularity

- Pressure to maintain peer status
- Drama and rumors
- Attention bias toward popular peers

Lansu, Cillessen, & Karremans, 2012; Lansu & Troop-Gordon, 2017; Nesi, Choukas-Bradley, & Prinstein, 2018; Nesi & Prinstein, 2015
Summary and Discussion

Perceived Popularity

Low

(Boys)

High

(Boys)

Social media context may exacerbate social comparison that boys do not otherwise experience

Boys with depression vulnerability may be drawn to seek feedback and reassurance via social media

Nesi, Choukas-Bradley, & Prinstein, 2018; Nesi, Miller, & Prinstein, 2017; Nesi & Prinstein, 2015
Summary and Discussion

Low Perceived Popularity

- Status seeking
- Reactive aggression
- Boys use alcohol to cope or improve status

Common Mechanisms

- “Likes” increase motivation for risky behaviors
- Decreased cognitive control when viewing popular photos of risky behaviors

High Perceived Popularity

- Increased pressure
- Status displays of risky behaviors
- Proactive aggression

Nesi, Choukas-Bradley, & Prinstein, 2018; Nesi & Prinstein, 2018; Sherman et al., 2016, 2018a, 2018b
Strengths and Limitations

**Strengths**

- Large, diverse sample of early adolescents
- Longitudinal design
- Good retention

**Limitations**

- Self-reports
- General social media use assessment
- Small subgroup of youth identifying as transgender and gender non-binary
Conclusions and Implications

- Transformation framework holds utility for conceptualizing how social media influences peer status processes
  - May increase perceived popularity
  - May exacerbate risk for psychological adjustment problems among adolescents low and high in perceived popularity

- Girls and boys more similar than different

- Social development theories need to
  - Expand conceptualization of perceived popularity
  - Address the social media context
Future Directions

• Broaden assessment strategies
  - Multiple popularity indices
  - Objective social media use measures

• Evaluate mechanisms
  - Digital status seeking
  - Social comparison and feedback seeking
  - Implicit associations and attention
  - Neurobiological processes

• Examine how peer status processes are transformed in the social media context among adolescents from diverse demographic and cultural backgrounds
Acknowledgements

• Alvord Foundation

• School partners and adolescents who participated in this study

• UConn faculty and PANDA project staff for their unmatched dedication to the implementation of this project
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