

Parents' Role in Adolescents' Personal Photo Sharing: A Moderated Mediation Model Incorporating Privacy Concern and Network Size

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Abstract

Disclosure of personal photographs on social networking sites could lead to potential harm to adolescent users. This study aims to understand parents' role in adolescents' visual information disclosure on Facebook as well as the mediating role of privacy concern and moderating role of Facebook network size. A total of 351 secondary school students who use Facebook participated in the study (49.6% boys; mean age $M = 13.98$, $SD = 0.94$). Results showed a significant mediating effect of privacy concern on the relationship between parental mediation and visual disclosure ($b = -0.07$, $Boot SE = 0.02$, 95% $CI [-0.116, -0.028]$). Furthermore, the effect of parental mediation on privacy concern was shown to be moderated by the level of network size ($b = 0.15$, $SE = 0.05$, $t = 3.04$, $p < 0.01$). Findings contribute to a better understanding of visual disclosure drivers, particularly of the underlying mechanisms of the protective effect of parental mediation. Practical suggestions for parents are discussed.

Peran Orang Tua pada Berbagi Foto Personal di Kalangan Remaja: Model Mediasi Termoderasi yang Menggabungkan Perhatian Privasi dan Ukuran Jejaring

Abstrak

Publikasi foto-foto pribadi di situs jejaring sosial dapat berpotensi membahayakan pengguna remaja. Penelitian ini bertujuan untuk memahami peran orang tua pada publikasi informasi visual remaja di Facebook serta peran dari perhatian pada privasi dan keluasan jaringan sosial di Facebook sebagai mediator. Sebanyak 351 siswa sekolah menengah pengguna Facebook berpartisipasi dalam penelitian ini (49,6% anak laki-laki; usia rata-rata $M = 13,98$, $SD = 0,94$). Hasil analisis menunjukkan perhatian terhadap privasi merupakan mediator yang signifikan pada hubungan antara mediasi orang tua dan publikasi visual ($b = -0,07$, $Boot SE = 0,02$, 95% $CI [-0,116, -0,028]$). Selain itu, pengaruh mediasi orang tua pada perhatian privasi dimoderasi oleh besarnya jaringan sosial ($b = 0,15$, $SE = 0,05$, $t = 3,04$, $p < 0,01$). Hasil meningkatkan pemahaman kita untuk memahami alasan orang mempublikasikan informasi dirinya secara visual, terutama bagaimana mediasi orang tua berperan menjadi efek protektif. Saran praktis bagi orang tua dibahas lebih lanjut dalam penelitian ini.

Keywords: parental mediation, privacy concern, network size, visual information disclosure

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1. Introduction

The Internet has created a highly visual environment where users can easily see one another, using various media formats, most of which are still photographs and videos. Typical adolescents post many pictures and videos online using social networking services (SNSs) such as Facebook, Instagram, Snapchat, and blogs and

even send visual media to unknown third-party websites (Chou, Liu, & Chou, 2019; Tsay-Vogel, Shanahan, & Signorielli, 2018). Disclosure of personal photographs could lead to potential harm to adolescent users, including identity theft, stalking, and cyberbullying, from third parties or online predators. Sharing photographs or videos with friends on SNSs is arguably perceived to be more compelling and personal than sharing textual

information, because it cues the “being-there heuristic” and fulfils gratifications related to relationship maintenance (Jeong, Kim, Yum, & Hwang, 2016; Sundar & Limperos, 2013; Waddell, 2016).

However, past research on disclosure of personal information on SNSs has been tilted in favor of textual data such as names, birth dates, phone numbers, and addresses. (Miyazaki, Stanaland, & Lwin, 2009; Shin & Kang, 2016). In comparison, very few studies have addressed privacy issues and disclosure of personal photographs, most of which are under the label of personally identifiable information (Liu, Ang, & Lwin, 2016). Furthermore, the underlying mechanisms of parental and peer influence on visual information disclosure has rarely been explored. Thus, this study intended to understand how parental mediation influence adolescents' visual information disclosure on Facebook. More importantly, this study adds to the extant literature by investigating the mediating role of privacy concern and the moderating role of Facebook network size in this relationship.

Parental Mediation and Visual Disclosure: Privacy Concern as a Mediator. The strategies parents use to supervise children's media use or help them interpret media content are defined as parental mediation (Warren, 2001). Three styles of parental mediation had been identified: active mediation, restrictive mediation, and co-using (Nathanson, 1999; Valkenburg, Krmar, Peeters, & Marseille, 1999). Co-using is the most controversial and is considered as coincidental mediation; therefore, most researchers tend to drop it from their parental mediation studies (Buijzen & Valkenburg, 2005; Lwin, Stanaland, & Miyazaki, 2008; Warren, 2001). There is substantial research documenting that parental mediational strategies, regardless of the types, are helpful in teaching adolescents to protect their personal information as well as to reduce their personal information disclosure on SNSs (Shin & Kang, 2016; Shin, Schriener, & Cho, 2009; Youn, 2009). Conversely, *laissez-faire* parenting or non-intervention from parents has been found to be related to more risky online behaviors in their children, including sensitive information disclosure (Lwin et al., 2008; Miyazaki et al., 2009; Sasson & Mesh, 2014).

The influence of parental mediation is crucial in developing and shaping children's attitudes and values regarding media (Austin, 1993; Fujioka & Austin, 2002; Moschis, 1985), which will in turn shape their media consumption behaviors. Previous research findings suggested that parental mediation can enhance children's protective media behaviors by improving their attitudinal factors, such as critical thinking, paying attention to content, and perceiving the importance of violent television (Mendoza, 2009; Moschis, 1985). In predicting online information protection behavior,

privacy concern was consistently found to be a robust and direct attitudinal predictor among young adults and adolescents. Users with higher privacy concern are more likely to protect their personal information by placing restrictions on their SNSs profiles, refraining from using websites that ask for personal information, and reducing online personal information disclosure (Christofides, Muise, & Desmarais, 2009; Joinson, 2001; Mohamed, 2010). In a study by Youn (2009), findings proposed that parental mediation shaped adolescents' protective behaviors online by heightening their privacy concern. Similarly, within the context of visual disclosure, we hypothesized that:

H1: Privacy concern regarding visual information mediate the negative effect of parental mediation on visual disclosure.

Network Size as a Moderator. During the transitional stage of adolescence, the need for socialization with peers increases, which competes with parental influence in shaping adolescents' attitudes and behaviors (Blos, 1967; Dolgin, 2011; Sasson & Mesh, 2014). One of the most well-examined peer factors is peer norms. Adolescent internet users were found to be likely to conform to peer norms regarding privacy settings and information sharing on Facebook (Hofstra, Corten, & van Tubergen, 2016; Saeri, Ogilvie, La Macchia, Smith, & Louis, 2014; Sasson & Mesh, 2014). Peer norms may further play important roles in basic profile information disclosure, such as birth dates, school information, and personal interests, as disclosing such information is pervasive among Facebook users.

Personal photo disclosure on Facebook is comparatively optional, which causes less peer pressure; thus, the influence of peer norms on adolescents' photo sharing could be minimized, whereas the Facebook audience size may become a more significant social incentive. Nevertheless, the effect of network size has rarely been investigated. Existing findings have indicated that a larger number of Facebook connections could make users disregard the privacy settings of their profile, thus inadvertently disclosing more personal information (Lewis, Kaufman, Gonzalez, Wimmer, & Christakis, 2008). An individual's number of Facebook friends also indicates his/her audience size. Users manage their identity or presentation by self-disclosure for a range of audiences (Boyd, 2008); therefore, having more Facebook friends is a plausible drive for sharing personal information, especially involving disclosure of personal photographs. This is supported by extant finding that a need for popularity predicts greater disclosure on Facebook (Christofides et al., 2009), and that popular adolescents desire to showcase themselves to as many people as possible as a form of self-expression (Hofstra et al., 2016).

Based on the existing findings, adolescents with a large number of Facebook connections are more likely to overlook privacy controls and disclose more visual information than adolescents with fewer connections. A lack of parental mediation could lead to more risks among this group of adolescents, compared to those with fewer Facebook contacts. Hence, we hypothesized that:

H2: The indirect effect of parental mediation on visual disclosure through privacy concern is moderated by network size.

2. Methods

Participants. The current study focused on visual disclosure within the context of Facebook use. A total of 351 secondary school students who were Facebook users participated in the study. Consent was obtained from both the participating adolescents and their parents. Participants' mean age was 13.98 years ($SD = 0.94$) with 49.6% boys, 35.0% grade one students, 45.3% grade two students, and 19.7% grade three students. Chinese participants comprised 77.2%, followed by Malay (16.8%), Indian (2.0%), and other ethnic groups (3.4%).

Measurements. Parental mediation. The parental mediation measurement used in the current study was revised from the Parental Mediation Questionnaire (Lwin et al., 2008). Participants rated how frequently their parents mediated their use of the Internet for each item, using a 5-point Likert scale (1 = *not at all*, 5 = *all the time*). There were two dimensions of parental mediation: active mediation (7 items) and restrictive mediation (7 items). Cronbach's alpha was 0.91 in this study.

Privacy concern. A five-item Privacy Concern Questionnaire regarding visual information was adapted for this study (Lwin, Wirtz, & Williams, 2007). Participants rated to what extent each statement described them using a 5-point Likert scale (1 = *not at all like me*, 5 = *completely like me*). A sample item is as follows: "I'm concerned about protecting my photos I post on Facebook". Cronbach's alpha was 0.91 in the current study.

Facebook network size. To differentiate adolescents' network size on Facebook, participants were asked to select the range of number of Facebook friends they had from "less than 100" and "more than 100". The cut-off of 100 Facebook friends was determined by referring to longitudinal data on network size based on 1,576 young Facebook users (Lewis et al., 2008). Approximately 68% of the participants had more than 100 Facebook friends.

Personal visual information disclosure. A scale for visual information disclosure was adapted to measure adolescents' disclosure of personal visual information on Facebook (Liu, Ang, & Lwin, 2013). Attitudinal disclosure was measured by asking how willing they were to disclose each of the eight personal photographs (by descriptions) on a 5-point Likert scale (1 = *not at all*, 5 = *very much*). Behavioral disclosure measured adolescents' disclosure of personal photographs on a simulated Facebook interface by showing eight actual personal photographs and asking participants to select "who can view this photograph" from "everyone" (scored 5), "friends of friends" (scored 4), "only friends" (scored 3), "customize" (scored 2), and "won't post at all" (scored 1). Cronbach's alpha was 0.87 in the current study.

3. Results

The mediation model was tested with model 4 and the moderated mediation model was tested with model 7 using PROCESS Procedure for SPSS v2.16.3 (Hayes, 2013). All analyses were computed using 95% bias-corrected confidence intervals (CI) with 5,000 bootstrap resamples.

Testing the Mediating Effect. The bootstrap results indicated a statistically significant mediation effect of privacy concern on the relationship between parental mediation and visual disclosure ($b = -0.07$, $Boot SE = 0.02$, 95% $CI [-0.116, -0.028]$). The Sobel test showed a significant result ($b = -0.07$, $SE = 0.02$, $Z = -3.20$, $p < 0.01$). Specifically, parental mediation had a positive effect on privacy concern after controlling for age and sex ($b = 0.20$, $SE = 0.02$, $t = 9.50$, $p < 0.001$). When predicting visual disclosure, privacy concern had a negative effect ($b = -0.35$, $SE = 0.10$, $t = -3.42$, $p < 0.001$) while parental mediation had no significant direct effect ($b = -0.04$, $SE = 0.04$, $t = -0.82$, $p = 0.415$) after controlling for age and sex. Thus, H1 was supported.

Testing the Moderated Mediation Model. As shown in Figure 1, results indicated a significant moderated mediation model between parental mediation and visual disclosure with privacy concern as the mediator and network size as the moderator ($b = -0.05$, $Boot SE = 0.03$, 95% $Boot CI [-0.121, -0.015]$). Thus, H2 was supported.

Specifically, as shown in Table 1, there was a significant interaction between parental mediation and network size when predicting privacy concern ($b = 0.15$, $SE = 0.05$, $t = 3.04$, $p < 0.01$), indicating that the effect of parental mediation on privacy concern is dependent on the level of network size. A post-hoc analysis of the significant moderation effects was conducted, as was suggested by Holmbeck (2002; see Figure 2).

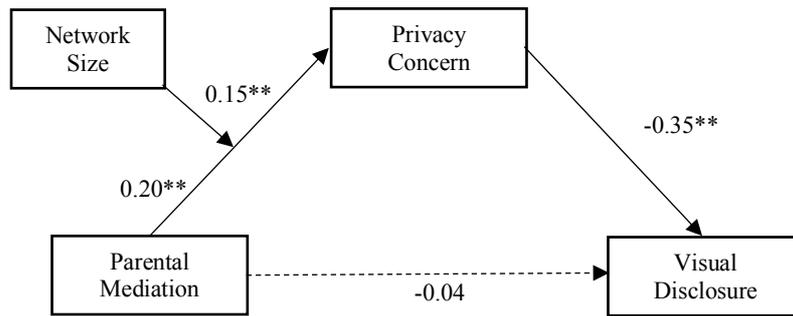


Figure 1. Moderated Mediation Effects: Indirect Relationship between Parental Mediation and Visual Disclosure through Privacy Concern that is Conditional upon Network Size (Path Coefficients are Unstandardized. *p < 0.05, **p < 0.01, *p < 0.001).**

Table 1. Regression Results Predicting Privacy Concern and Visual Disclosure

	Privacy Concern		Visual Disclosure	
	<i>b</i> (<i>SE</i>)	<i>p</i>	<i>b</i> (<i>SE</i>)	<i>p</i>
Control Variables				
Age	-0.46(0.27)	0.092	0.63(0.57)	0.270
Gender	0.58(0.53)	0.277	-1.92(0.98)	0.051
Conceptual Variables				
Parental Mediation (PM)	0.20(0.02)***	0.000	-0.04(0.05)	0.440
Network Size (NS)	-0.27(0.60)	0.656	--	--
PM x NS	0.15(0.05)**	0.003	--	--
Privacy Concern	--	--	-0.35(0.11)**	0.001
R2(F)	0.25(26.62)***	0.07(5.63)***		
N	342	342		

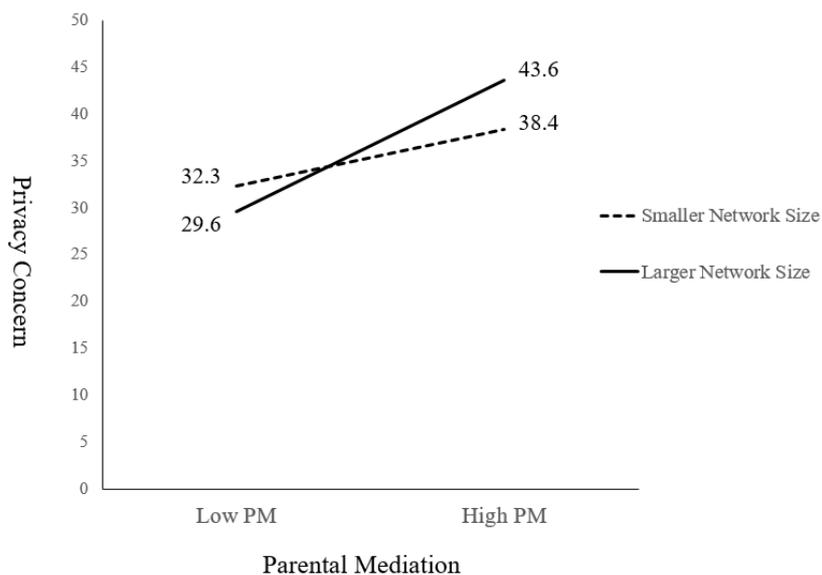


Figure 2. Network Size as a Moderator of the Relationship between Parental Mediation and Privacy Concern

Additionally, the conditional indirect effect of parental mediation on visual disclosure through privacy concern was -0.03 when network size was smaller (Boot $SE = 0.02$, 95% Boot $CI [-0.078, -0.006]$), versus -0.08 when network size was larger (Boot $SE = 0.03$, 95% Boot $CI [-0.145, -0.036]$).

4. Discussion

The current study highlights issues concerning adolescents' disclosure of personal photographs on Facebook, and the findings suggest that parental mediation can reduce adolescents' visual disclosure by increasing privacy concern, and that this influence is moderated by Facebook network size.

First, the enhancement of adolescents' privacy concern was found to be an effective way to reduce visual disclosure. Thus, parents can put more effort into cultivating their children's awareness of privacy issues and reminding them to manage their privacy settings on SNSs to better control who can view their personal information.

Second, the role of Facebook network size was highlighted in the present study, which is a more controllable peer factor compared to peer norms, and therefore more practical for meaningful research. This factor was found to moderate the influence of parental mediation. Specifically, for adolescents with larger network sizes, low parental mediation was shown to be a prominent risk factor that reduced privacy concern and increased visual disclosure. In contrast, despite having insufficient parental mediation, adolescents with smaller network sizes must still be vigilant regarding their privacy when sharing visual information online.

In the lives of adolescents, friends and social networks outside the family become more central (Dolgin, 2011; Sasson & Mesh, 2014) and a greater network size could become a risk factor for their safety. Findings in this study suggest that parents should pay particular attention to adolescents with more Facebook friends, and the lack of parental supervision over their Internet use could result in more potential physical and psychological risks. Controlling adolescents' Facebook network size could be an effective way to reduce these risks. Additionally, parents can educate their children to be more prudent while adding new Facebook friends so as to limit their Facebook network to a smaller size.

Prior research pointed out that parents playing no significant role in the social lives of their adolescent children is a misguided belief (Brown & Bakken, 2011). In the current study, the protective effect of parental involvement was more strongly demonstrated among adolescents exposed to greater negative peer influence.

This study had a few limitations. The investigation into visual disclosure only covered the amount dimension, without including the dimensions of frequency, depth, and breadth. Future studies could further examine visual disclosure in various dimensions as well as other forms of visual information such as video disclosure. In addition, there could be a gap between adolescent-reported and parent-reported parental mediation, and comparison between both influences is a possible direction for future studies. Longitudinal research methods could be adopted to observe the changes in parental and peer influence during adolescence. Furthermore, with the growing popularity of Instagram and some other emerging SNSs, Facebook may not be used most frequently by some adolescents. Thus, the new generation of SNSs should be further studied to explore more nuanced findings.

5. Conclusion

In conclusion, this study focused on adolescents' visual information disclosure on Facebook and investigated the interaction between peer influence and parental influence. First, the present study shed light on adolescents' visual information disclosure on SNSs, which has been rarely studied previously. Second, the findings contributed to the in-depth understanding of the underlying mechanisms of the protective effect of parental mediation on adolescents' risky online behaviors. Third, potential risks caused by a larger Facebook network size were highlighted, which suggested parents should be attentive toward adolescents with more Facebook contacts.

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