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Development and Validation of a Parental Social Media Mediation Scale Across Child and Parent Samples

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Abstract

Purpose – Social media use carries both opportunities and risks for children and adolescents. In order to reduce the negative impacts of social media on youth, the authors focus our efforts on parental mediation of social media. Specifically, the purpose of this paper is to enhance the conceptualization and operationalization of parental mediation of social media.

Design/methodology/approach – First, the authors conducted focus groups with both children and parents in Singapore to categorize parental mediation strategies for social media and develop an initial scale of these strategies. Then, a survey was conducted with a nationally representative sample of 1,424 child participants and 1,206 parent participants in Singapore to develop and test the scale.

Findings – The focus group results identified four conceptually distinct parental mediation strategies for social media, labeled as active mediation, restrictive mediation, authoritarian surveillance, and non-intrusive inspection, and were used to develop an initial scale of these strategies. Based on the data from survey questionnaires, the authors investigated both inter-item and item-total correlations and performed confirmatory factor analysis (CFA), which developed and validated the scale of parental mediation of social media.

Originality/value – First, this research explained what parents do to manage children's social media use and identified four conceptually distinct parental mediation strategies of social media, making a significant contribution to the parental mediation theory. Additionally, the research developed the first theory-derived, successively validated and reliable scale in parental mediation of social media.

Keywords: Social media, Conceptualization, Scale development, Operationalization, Parental mediation

Paper type: Research paper

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Introduction

Over the past decade, social media have become an essential part of individuals' lives, changing the ways they think, feel, behave and interact. However, social media use conveys various risks. Individuals, especially children and adolescents have been exposed to inappropriate content and undesirable contacts that have the potential to threaten their physical and psychological well-being (Livingstone and Helsper, 2008; Kaplan and Haenlein, 2010). Besides content risks such as violent and pornographic content that have been widely available in the Web 1.0 era, children and adolescents encounter other risks on social media, especially contact risks such as cyberbullying, sexting, and loss of privacy (Tartari, 2015).

The widespread use of social media in Singapore, which has the highest global ranking for smartphone penetration and the most active users of social media worldwide (Ho *et al.*, 2016), epitomizes the global social media boom. Singapore is a highly technically oriented society where the residential wired broadband household penetration rate reached 102.6 percent in March 2016 (Infocomm Development Authority of Singapore, 2016). Moreover, 85 percent of internet users in Singapore have used social media (Ngu, 2018), and 39 percent of children and 78 percent of adolescents have used social media (Infocomm Development Authority of Singapore, 2016). Thus, not surprisingly, children and adolescents in Singapore may encounter various risks on social media. For example, Kwan and Skoric (2013) explored risks on Facebook among adolescents in Singapore and found that 59.4 percent of the participants reported having been bullied on Facebook, while 56.9 percent claimed to have bullied others on Facebook. Liu *et al.* (2013) indicated that privacy disclosure on Facebook among adolescents was quite common in Singapore. Other researchers found that social media risks could lead to psychological harm and stress,

including isolation, loneliness, anxiety and depression (Dake *et al.*, 2012; Kowalski *et al.*, 2008; Patchin and Hinduja, 2006), that could potentially trigger more-severe antisocial behaviors such as absenteeism, substance use and even suicide (e.g. Hay *et al.*, 2010; Low and Espelage, 2014; Walker and Moak, 2010). Hence, protecting children and adolescents from social media risks is critical.

According to socialization theory (Maccoby, 2007), children are social learners who are affected by their contacts or interactions with socialization agents such as parents, peers and the media. The socialization process results in various social learning properties or socialization outcomes in both cognitive and behavioral ways (Maccoby, 2007). Parents are the primary agents of children's socialization (Caruana and Vassallo, 2003), and they play a crucial role in children's interaction with the media (Buijzen and Valkenburg, 2005; Livingstone and Helsper, 2008). Based on this, parental mediation is potentially critical for reducing the negative impacts of social media. In Singapore, a series of educational programs and campaigns have been conducted to emphasize parental roles in preventing children's exposure to social media risks (Ministry of Education Singapore, 2014). Moreover, several scholars have indicated that Singapore's highly technically oriented environment leads parents to engage in parental mediation strategies differently from parents in many other countries (Shin and Li, 2017). Understanding how parents in this highly technically oriented society protect their children from social media risks could, therefore, be useful for parents in other countries that are becoming more technologically connected.

Although several recent studies have explored the strategies for parental mediation of children's internet use and developed scales to measure them (Nikken and Jansz, 2014; Symons, Ponnet, Emmery, Walrave and Heirman, 2017; Symons, Ponnet, Walrave and Heirman, 2017), parents may use many different ways to manage their children's social media use (Chen and Shi, 2019). For example, parents may add their children as friends on

social media to determine when and how their children use social media (Kanter *et al.*, 2012). However, still unclear is what mediation strategies parents apply to manage children's social media use and how these mediation strategies can be measured.

The current research aims to first investigate the strategies parents adopt to manage children's social media use. To address the research gaps identified and contribute to parental mediation theory, focus groups and a survey were employed to identify conceptually distinct parental mediation strategies for social media use, thereby contributing to the development of the parental mediation theory in the context of social media. Furthermore, a scale of parental mediation of social media, which would be the first in this domain of research, was developed and validated. This provides a promising new avenue for future parental mediation or social media research, such as comparing children's and parents' perspectives on parental mediation of social media, exploring the effectiveness of parental mediation on preventing children from taking social media risks, and identifying the antecedents of parental mediation strategies of social media.

Parental mediation

Parental mediation theory posits that parents use different strategies to mediate negative media effects (Clark, 2011). This theory has its foundations in media effects and information-processing theories as well as interpersonal communication theories, as it explains how interpersonal communication between parents and children reduces the negative effects of media on children (Clark, 2011; Shin and Ismail, 2014).

Since the proliferation of television in the home, children have been exposed to various undesirable media content depicting violence, pornography and materialism. This exposure can result in negative socialization outcomes such as delinquency, materialism and aggression (Nathanson, 2001). Parental mediation research was initiated to examine how parental mediation can influence negative media effects (Austin, 1993). Three broad

strategies for parental mediation have been identified from research on parental mediation of television: active mediation, restrictive mediation and co-viewing (Nathanson, 1999, 2001; Valkenburg *et al.*, 1999). Active mediation refers to the active explanation of media content to children. Restrictive mediation consists of limiting children's television-viewing time and/or content. Co-viewing involves sharing media experiences with children without critical discussion about the content. Existing research found that these parental mediation strategies in regard to television could enhance children's understanding of television programs (Collins *et al.*, 1981; Desmond *et al.*, 1985). They also mitigate negative socialization outcomes such as television-induced aggressive inclinations, advertising-induced materialistic attitudes and psychological symptoms (i.e. depression, worry, and fear) (Cantor and Wilson, 2003; Nathanson, 1999). For example, active mediation has been shown to help children cultivate a critical stance toward television (Nathanson, 1999), which enhances the content that children learn from media (Desmond *et al.*, 1985), changes their attitudes toward media pornography and violence (Corder-Bolz and O'Bryant, 1978), counteracts the undesirable effects of television commercials (Prasad *et al.*, 1978), soothes children who are exposed to frightening television scenes (Cantor and Wilson, 1984), and reduces the levels of television-induced aggression (Nathanson, 1999). Furthermore, parental comments and interpretations of television content about whether and how television represents the actual world could help children understand how television messages can be different from real life (An and Lee, 2010; Austin, 1993). Similarly, restrictive mediation has been reported to increase comprehension of television programs' plots (Desmond *et al.*, 1985) and be related to less aggression (Nathanson, 1999). In addition, it has been reported that restrictive mediation can decrease the amount of time children spend watching television (Lin and Atkin, 1989). Co-viewing can also result in positive outcomes. For example, studies have demonstrated that parental co-viewing enhanced children's learning when they viewed

educational television programming (Dorr *et al.*, 1989; Salomon, 1977).

Over the years, the internet has replaced television as the most popular type of media for children and adolescents. Similar parental mediation strategies have evolved and been applied to supervise and control children's internet use (Lwin *et al.*, 2008; Mesch, 2009; Panek, 2013). For example, parents may explain internet content and talk to or guide children regarding appropriate internet use (active mediation) (Shin and Lwin, 2017); they may also apply parental filters or non-intrusive inspection software to check on and restrict the online activities and content that their children are allowed to engage in (restrictive mediation) (Mesch, 2009). Studies have indicated that active mediation and restrictive mediation are both effective for decreasing the amount of time children use the internet (Sasson and Mesch, 2014) and the likelihood that they will engage in risky behavior online, such as taking risks related to contact (Livingstone and Helsper, 2008; Shin and Ismail, 2014), privacy disclosure (Lwin *et al.*, 2008), sexual solicitation (Marcum *et al.*, 2010), and cyberbullying (Navarro and Jasinski, 2012). However, due to smaller screen sizes, viewing positions and reliance on the mouse among other factors, co-viewing is no longer a viable parental mediation strategy (Livingstone and Helsper, 2008). Despite this, studies focusing on active and restrictive mediation in the context of internet use have found that parental mediation is still effective in protecting children from online risks (Buijzen and Valkenburg, 2005; Livingstone *et al.*, 2011; Lwin *et al.*, 2008).

Recently, social media have become extremely popular among children and adolescents (Chen *et al.*, 2017). However, these forms of media also serve as a dangerous platform for cyberbullying, with numerous studies indicating its exceptionally high prevalence rates on social media (e.g. Whittaker and Kowalski, 2015). Compared with conventional internet websites or applications such as e-mail and bulletin boards, social media integrate aspects of all these applications, thereby allowing individuals to interact with

friends, acquaintances, and even strangers by sending private messages, audio clips, and videos (Chen and Shi, 2015; Chen *et al.*, 2019). In short, social media communication is much more complicated than the simpler acts of watching television or viewing online content. In addition to undesirable content, children and adolescents may experience a variety of contact risks (where the individual participates in risky peer or personal communication) and conduct risks (where the individual's behavior contributes to experiencing risky content or contact) on social media (Livingstone *et al.*, 2013; Staksrud and Livingstone, 2009). Earlier in the era of television or, more recently, in the internet age, parental mediation was used to address the risks of passive exposure to undesirable content. However, in the social media age, parental mediation is required to address not only risks arising from exposure to a vast amount of user-generated content but also those that arise from online social interactions. Moreover, most social media sites, such as Facebook, Twitter and Instagram, include user profiles or personal sites that allow people to post personal information, comment on postings by others, and upload photos or videos (Abhyankar, 2011). Thus, it is possible for parents to learn about their children's online behaviors by checking their social media accounts or profiles. Based on the above considerations, parental mediation strategies used to manage children's social media activities would vary largely from the mediation strategies used to manage their television viewing and internet use (Chen and Shi, 2019).

Indeed, with the rising popularity of social media, parents have become increasingly concerned about their children's online activities and have used various strategies to regulate children's social media use (Panek, 2013). Several researchers have found that parental mediation targeted toward social media usage could reduce the amount of time children spend on social media (Livingstone *et al.*, 2013). Moreover, parents' non-intrusive inspection of social media, such as having access to adolescents' profiles or passwords, decreases the risk of sexting (Romo *et al.*, 2017). Liu *et al.* (2016) indicated that adolescents

with high parental mediation were less likely to disclose personal information on Facebook. However, the strategies adopted by parents to manage their children's social media use remain under-studied in this area of research. Therefore, we explore conceptually different parental mediation strategies for social media in Study 1 and develop and validate a scale for them in Study 2.

Study 1

Study 1 used a focus group design to explore, identify and classify parental mediation strategies for social media and to develop survey items for Study 2, which seeks to validate the identified categories of parental mediation strategies for social media.

Method

Research design. Focus groups were chosen in this study for several reasons. First, while both focus groups and individual interviews can yield highly detailed and in-depth information, focus groups enable researchers to collect information with minimal steering by the interviewer. Second, focus groups can facilitate interaction among participants. During a focus group discussion, participants may seek clarification from other participants, prompt them to reveal more information and reconsider their own responses, which may disclose more relevant information (Finch *et al.*, 2014). Third, some parental mediation research has indicated that parents and children welcome group discussions on social media use and digital literacy (e.g. Symons, Ponnet, Emmery, Walrave and Heirman, 2017; Symons, Ponnet, Walrave and Heirman, 2017). Specifically, a double-layer focus group design was used in this research in Singapore; we recruited two layers of participants – primary school students ages 9-13 and secondary school students ages 14–17 – and sampled a group of children and parents from each layer using convenience sampling. According to socialization theory, the importance of parents' roles in the socialization of children tends to decline as their children grow older (Maccoby, 2007). Parents are the main socialization agents for their

children (Caruana and Vassallo, 2003; Maccoby, 1992), but when children enter adolescence, they tend to spend more time with external socialization agents and to pursue autonomy and independence. In this regard, parents might use different strategies for children and for adolescents in order to mediate their social media use. Moreover, the groupings based on students' school levels and ages result in the participants being more homogeneous, which would, in turn, increase their willingness to express themselves (Morgan, 1998). Thus, it is important to compare results between these two age groups.

Procedure. Focus groups were conducted, including two parents' groups and two children's groups. We believe that these four groups were sufficient because the amount of new information reached a saturation point. Specifically, each focus group comprised six participants (Morgan, 1998). There were more female than male participants in each of the parents' focus groups since mothers are usually the primary caregivers for children. In all, we recruited 12 parents and 12 children from different schools for a total of four focus groups.

After receiving approval from the ethics review board, we invited Singaporean primary and secondary school students and their parents to participate in the study between April and June 2015. We recruited one parent from each of the families. On the scheduled dates for the focus groups, there were two on-going sessions (one parent group and one student group) at the same time in separate meeting rooms within community centers or hotels. Before conducting the focus groups, children and parents were told the purpose of the study and that their participation was voluntary. We reinforced that they could withdraw from the study at any time with no penalty. Following this, both parent and child participants were guided to discuss the strategies parents use to manage children's social media use. Finally, we offered a \$100 gift voucher at a local grocery store as a token of appreciation to each parent and child pair who participated in the focus group. If only the parent or the child participated, a \$50 grocery-store gift voucher was offered instead.

Analysis. In order to fulfill our research objectives, the four focus group discussions were tape recorded, transcribed and analyzed. Conventional content analysis was employed to analyze the focus group transcripts (Hsieh and Shannon, 2005). The transcripts were read repeatedly to achieve immersion and to obtain a sense of the situation (Tesch, 1990). By reading the transcripts, two coders highlighted the exact words from the text as codes or created new codes to capture key concepts that emerged with the initial coding scheme (Morse and Field, 1995). Subsequently, these codes were sorted into categories based on how they were related and linked to each other. Finally, each category, subcategory and code was defined. The acceptability and reliability of the designated categories were tested through multiple coding by two coders, and the validity of the coding was checked through deviant case analysis.

Results

The four focus groups included a total of 24 participants, comprising 12 parents and 12 children. For parent participants who completed the focus group, there were eight females and four males; their mean age was 38 years old (33–46). For child participants, there were five females and seven males; six were primary school students and six were secondary school students. Their mean age was 13 years old (9–17).

According to the results from the focus groups, four different parental mediation strategies, including active mediation, restrictive mediation, authoritarian surveillance and non-intrusive inspection, were identified.

Active mediation. The parent participants expressed that they used an active mediation strategy to regulate their children's social media use. One parent said, "I tell my child [that] social media is not such [a] good [thing] and remind her not to release [her] real name, address and phone to strangers on social media." Another parent expressed, "I ask my child to tell me [if] something happens on social media, then I give some advice to her and explain

the potential risks on social media.” The child participants echoed similar views. One child said, “My mum tells me not to do stupid things on social media [...]; she gives me some news about online risks such as cyberbullying, internet fraud, [and] cyberstalking to educate me [about] how to use social media well and tells me to stop using social media when [I] feel uncomfortable.” Another child mentioned, “My parents do not give me many restrictions on my social media use, but they give me some suggestions. [...] They suggest [to] me not to believe others on social media because on social media, people are not always who they say they are.”

Restrictive mediation. Participants claimed that most parents tend to employ a restrictive mediation strategy to regulate children’s social media use. They usually establish several rules to restrict children’s behaviors on social media. One parent said, “Yes, I think it is important to give them some rules to let children know what they can or cannot do on social media and what social media [platforms] they can use.[...] I don’t want my child to use WeChat to get to know strangers.” Another parent said, “I don’t want to see [that] my children use social media only for social [interactions] or gaming, so I only allow them to use social media for study [purposes].” In addition, most participants, including parents and children, indicated that time restriction was the most popular strategy that parents used to manage children’s social media use. One child said, “My parent only allow[s] me to use social media on weekends and holidays.” Another child expressed, “They always ask me to finish homework then play.” A parent mentioned, “I don’t want my child to spend too much time on social media, which may affect his studies. So I ask him to finish [his] homework first. I think it is better to spend no more than one hour online per day.”

More interestingly, several of the parents indicated that the ways they manage younger and older children’s social media use are different. Parents were more likely to restrict younger children’s social media use than that of older children. For example, one

parent mentioned, “I restrict my younger son’s time with social media. But for the older one, I prefer to give him some advice instead of restrictions.”

Authoritarian surveillance. Many parents who were familiar with social media reported that they logged onto their children’s social media accounts to check or track their behaviors online. One parent said, “I ask my daughter to share her Facebook account and password with me, so [that] I can log onto her account to check her conversations with others and [her] friend list on Facebook.” Another parent said, “I have my child’s social media accounts and passwords. I often log onto his accounts to check his activities on social media”. In addition, one child mentioned, “My mother has my Facebook account. Sometimes, she logs onto my Facebook to check what I do on Facebook.”

Non-intrusive inspection. Many parents did not log onto their children’s social media accounts but added their children as social media friends in order to browse their profiles and follow their status. One parent expressed, “I know my son[’s] Facebook accounts and add him as [my] friend so I can see his profile and know what he does on Facebook.” Another child said, “My mum knows my Facebook and Instagram accounts. She adds me as her friend to check my status.” More interestingly, one child reported, “Now I do not say too much on my Facebook because my parents add me as [her] friend. [...] I prefer to update my status on Twitter or other places.”

The results of the focus group discussions provided an initial classification of parental mediation strategies for social media and elicited information for developing items for each category of parental mediation strategy. Specifically, the items were developed to measure each category based on the responses from the focus group participants and the previous scale. Items AM1–AM4 for active mediation and items RM1–RM 5 for restrictive mediation were modified from the previous scale of parental mediation in regard to the internet (Lwin *et al.*, 2008), whereas other items were fully based on the findings of the focus groups.

Following this, these items were modified so that they were simple and generic enough to be answered by younger children. Finally, an initial 17-item scale with the four subscales (3–5 items per construct) was created to generate two survey questionnaires for the children and parents (see Tables I and II).

[Insert Tables I and II about here.]

Study 2

In Study 1, we identified four categories of parental mediation strategies for social media and developed an initial 17-item scale for them. However, whether the categorization formed based on the focus groups was accurate remained unclear. Similarly, the validity and reliability of the scale remained uncertain as well. Therefore, Study 2 aims to validate the constructs and the initial scale across both the child and parent samples using the survey method.

Method

Sample and procedures. After obtaining approval from the ethics review board and the Ministry of Education in Singapore for the survey study, we recruited upper primary school students (i.e. primary Grades 4–6), secondary school students from Levels 1–5, and their parents to complete the paper-and-pencil questionnaires between June and December 2015. We used multi-stage cluster sampling to randomly select four primary schools (one each from the northern, southern, eastern, and western regions officially designated by the government) and four secondary schools (one from each of the same four regions officially designated by the government) as participating schools. At the first stage, a total of 15 primary schools (from all regions) and 12 secondary schools (from all regions) were invited to participate in the study; four primary and four secondary schools agreed to participate. The response rates for the primary and secondary schools that agreed to participate were 26.7 and 33.3 percent, respectively.

We used a parent–child matched sample design in which the parents who answered the questionnaires were the parents of the students sampled. This yielded a total sample size of 1,424 students (10–18 years old; mean age: 12 years old; 41.3 percent males) and 1,206 parents (29–76 years old; mean age: 44 years old; 26.7 percent males). Specifically, 635 upper primary school students (10–15 years old; mean age: 11 years old; 48.3 percent male) and 442 of their parents (29–68 years old; mean age: 43 years old; 30.6 percent male), as well as 789 secondary school students (12–18 years old; mean age: 14 years old; 35.6 percent male) and 764 of their parents (30–76 years old; mean age: 45 years old; 24.4 percent male) participated in our study. The final response rate for the student participants was 69.6 percent (60.7 percent for primary schools and 78.4 percent for secondary schools), and the final response rate for the parent participants was 59.6 percent (44.2 percent for primary schools and 75.0 percent for secondary schools). The margin of error was approximately ± 3 percent at the 95% confidence level.

Instrument. The initial 17-item scales for children and parents were included in the child and parent questionnaires, together with demographic questions. Parent participants were asked to indicate the frequency with which they engage in each parental mediation strategy for their child. Child participants were asked to indicate the frequency with which their parents engage in each parental mediation strategy on their behalf. A seven-point Likert-type scale, where 1 “Not at all” and 7 “Very Frequently,” was used.

Analysis. As recommended by Arnold *et al.* (2000), we used a two-pronged approach to test the initial scale of parental mediation of social media. First, we investigated both inter-item and item-total correlations for each category of parental mediation across the child and parent samples (Churchill, 1979). The items with low inter-item and item-to-total correlations in either the child or parent samples were removed. Sweeney and Soutar (2001) indicated that items with correlations of less than 0.50 suggest that they generated more noise than

information and thus should be removed. After that, we performed confirmatory factor analysis (CFA) with maximum-likelihood parameter estimation across the child and parent samples using Mplus 7.0 (Muthén and Muthén, 2012). Compared with exploratory factor analysis, CFA is more suitable for refining and improving the measurement model by assessing whether the factor structure of the prespecified instrument provides a good fit to the data and whether the structure fits as well as and as parsimoniously as other models (Floyd and Widaman, 1995). In line with the recommendations of Bollen and Long (1993), several fit indices were used to evaluate the appropriateness of the model, including the ratio of χ^2 to its degree of freedom, comparative fit index (CFI), Tucker–Lewis Index (TLI), and root mean square error of approximation (RMSEA). Finally, the reliability, convergent validity and discriminant validity of the scale were tested.

Results

First, only one item (AM 1) was eliminated because its low inter-item and low item-total correlations were less than 0.30 in both the parent and the child samples. The remaining 16 items were included in the resulting modified model, depicted in Figure 1.

[Insert Figure 1 about here.]

Furthermore, according to the recommendations by many scholars (Kohring and Matthes, 2007; Schultz, 2000; Sweeney and Soutar, 2001), we tested our modified four-factor model against two additional models: a one-factor model and a three-factor model. First, since some studies have considered parental mediation of social media as a unidimensional construct (Chen and Shi, 2019), all 16 items were loaded on a single factor to test the one-factor model. Second, the three-factor model suggested that new mediation strategies, i.e., authoritarian surveillance and non-intrusive inspection, that we identified in Study 1 represent a single functional dimension rather than two dimensions. To test this model, the first eight items were loaded on the active mediation and restrictive mediation factors, respectively,

consistent with our modified four-factor model, but the remaining 8 items measuring authoritarian surveillance and non-intrusive inspection were loaded on one factor.

The goodness-of-fit summary is shown in Table III. The model adequacy was significantly compared using χ^2 difference tests. First, the null model was rejected in both the child sample ($\chi^2 = 8,756.58$, $df = 20$, $\chi^2/df = 72.97$, $RMSEA = 0.23$, $CFI = 0.00$, $TLI = 0.00$) and the parent sample ($\chi^2 = 10,239.30$, $df = 120$, $\chi^2/df = 85.33$, $RMSEA = 0.26$, $CFI = 0.00$, $TLI = 0.00$). The one-factor model showed a better but still unacceptable fit in both the child ($\chi^2 = 4,272.51$, $df = 108$, $\chi^2/df = 39.56$, $RMSEA = 0.17$, $CFI = 0.52$, $TLI = 0.46$) ($\Delta\chi^2(12) = 4,484.07$, $p < 0.001$) and the parent sample ($\chi^2 = 2,793.45$, $df = 99$, $\chi^2/df = 28.22$, $RMSEA = 0.15$, $CFI = 0.73$, $TLI = 0.68$) ($\Delta\chi^2(21) = 7,445.85$, $p < 0.001$). The three-factor model was much improved but did not provide an acceptable fit in both the child sample ($\chi^2 = 806.98$, $df = 97$, $\chi^2/df = 8.32$, $RMSEA = 0.07$, $CFI = 0.92$, $TLI = 0.90$) ($\Delta\chi^2(11) = 3,465.53$, $p < 0.001$) and the parent sample ($\chi^2 = 558.72$, $df = 96$, $\chi^2/df = 5.82$, $RMSEA = 0.06$, $CFI = 0.95$, $TLI = 0.94$) ($\Delta\chi^2(3) = 2,234.73$, $p < 0.001$). Finally, our proposed four-factor model showed a great improvement over the two alternative models. The fit indices for this model adequately satisfied the level of aspiration in both the child sample ($\chi^2 = 390.95$, $df = 94$, $\chi^2/df = 4.16$, $RMSEA = 0.05$, $CFI = 0.97$, $TLI = 0.96$) ($\Delta\chi^2(3) = 416.03$, $p < 0.001$) and the parent sample ($\chi^2 = 361.57$, $df = 93$, $\chi^2/df = 3.89$, $RMSEA = 0.05$, $CFI = 0.97$, $TLI = 0.97$) ($\Delta\chi^2(3) = 197.15$, $p < 0.001$).

[Insert Table III about here.]

In order to further ensure the psychometric properties of the measures, we examined the reliability, convergent validity and discriminant validity of our proposed four-factor scale across the child and parent samples (Bagozzi and Yi, 1988; Fornell and Larcker, 1981). First, reliability was evaluated using the composite reliability values. Hair *et al.* (1998) recommended an acceptance level of 0.70 for the composite reliability. As summarized in

Tables IV and V, all of the factors in the model have a value greater than 0.83 in the child sample and 0.89 in the parent sample, thereby meeting the criteria. Second, convergent validity was tested by two criteria: all of the factor loadings should be greater than 0.60 and the average variance extracted (AVE) by each factor should be higher than the variance due to measurement error for that construct. As listed in Table VI, all the factor loadings exceeded 0.60. Tables IV and V show that all AVEs were larger than the variance due to measurement error in both the child and parent samples. Thus, convergent validity was established. Finally, to test discriminant validity, Fornell and Larcker (1981) indicated that the square root of the AVE (SRAVE) should exceed the correlation shared between the factor and other factors. Tables IV and V present the correlations among factors and SRAVE on the diagonal. Moreover, SRAVE was greater than the shared correlation between each pair of factors in both the child and parent samples. Hence, the discriminant validity of our proposed model measures was reasonable.

[Insert Tables IV, V, and VI about here.]

Discussion

The purpose of this research was to deal with the conceptualization and operationalization of parental social media mediation. In Study 1, we conducted focus groups to identify four conceptually distinct parental mediation strategies for social media labeled as active mediation, restrictive mediation, authoritarian surveillance, and non-intrusive inspection. The first two strategies were similar to the ways parents use to regulate children's internet use (Lwin *et al.*, 2008; Livingstone *et al.*, 2011). Active mediation refers to discussing social media with children and guiding them on the appropriate use of social media. Restrictive mediation of social media involves setting rules to not only limit the time children spend on social media but also the activities they engage in. More interestingly, the results showed that parents tended to use restrictive mediation to regulate children and active

mediation to manage adolescents (see Table VII); this finding is in line with extant research (Pasquier, 2001; Nikken and Jansz, 2006). One plausible explanation is that the influence of restrictive mediation on children's media use declined as the children grew older (Maccoby, 2007). When individuals enter adolescence, they start to pursue autonomy and independence (Blos, 1979). Thus, although children tend to obey their parents, adolescents typically react negatively to parental authority if parents apply strict controls on their media use (Lwin *et al.*, 2008). Considering these differences, parents typically engage in restrictive mediation for children and active mediation for adolescents.

[Insert Table VII about here.]

Furthermore, two new strategies – authoritarian surveillance and non-intrusive inspection – were widely used to manage children's social media use. These two strategies arose in relation to social media's unique features, such as personal accounts, one-to-one messaging, and user profiles. These differed greatly from the conventional parental mediation strategies of television or internet use. Specifically, some parents requested that their children share their social media accounts and passwords with them. This allowed them to log onto their children's social media accounts to track all their online content such as open posts, comments and statuses on social media profiles as well as to check their private conversations (e.g. one-to-one messaging) on social media. Pew Internet (2016) has indicated that it is quite common for parents to request the social media passwords of their young children. Moreover, the results revealed that many parents frequently log onto social media to surveil or track children's activities. However, this strategy enforces strict obedience and seriously invades children's privacy, thus its label of authoritarian surveillance.

In contrast, the focus group findings revealed that some parents employed a relatively gentler strategy – non-intrusive inspection to follow or check children's behaviors on social media. These parents checked their children's social media profiles directly and/or added

their children as a social media friend in order to follow their children's social media postings. This is in line with findings by Pew Internet (2016), which found that more than 50 percent of parents have checked their teen's social media profiles. About 45 percent of parents have added their children as Facebook friends. Similar to authoritarian surveillance, non-intrusive inspection was used to check children's social media activities. However, non-intrusive inspection was used only to check on children's open posts, comments and statuses on social media profiles but not their private conversations and interactions with others on social media.

In addition to the classification of parental mediation strategies for social media, the results of the focus group elicited information to develop items for each category of parental mediation. An initial four-factor scale was created to measure parental mediation of their children's social media behavior.

In Study 2, in order to develop and validate the initial scale, we first removed one item with low inter-item correlations and low item-total correlations to yield a resulting modified model based on the initial scale of parental social media mediation. Next, we tested this modified four-factor model against two additional models using CFA across both child and parent samples. The results revealed that this postulated model provides a highly acceptable model fit to the observed data. In addition, the reliability, convergent validity and discriminant validity of our postulated four-factor scale were tested. The results showed that these scales and the four-factor structure have sound and stable psychometric properties. Therefore, this scale is reliable and valid in measuring both parents' and children's perspectives of parental social media mediation.

Implications and limitations

There are several contributions of this research. It is the first to explore the conceptualization and operationalization of parental mediation of social media. Theoretically,

this research expanded on parental mediation literature, establishing that parental mediation with respect to social media is a multi-dimensional concept with four strategies. The results revealed what parents do to manage children's social media use and identified four conceptually distinct parental social media mediation strategies, thereby making a significant contribution to parental mediation theory. In particular, due to the distinct context of social media, this research developed two new dimensions of parental mediation based on the focus groups and survey, which made a conceptual contribution to the theory of parental mediation. In addition, the research developed the first theory-derived, successively validated and reliable scale of parental mediation of social media, which can be useful to researchers interested in this area. A number of applications of the scale thus become possible, such as a comparison between children's and parent's perspectives of parental mediation of social media use, the effectiveness of different parental mediation strategies for social media on children's behaviors on social media, and the factors driving different parental mediation strategies for social media. Therefore, the results of this research will likely be valuable for future studies in the domain of parental mediation and/or social media. Since risks associated with the use of social media are gaining an increasing amount of interest by researchers and becoming a significant and popular research topic, the scales put forward by this research could be used to examine the relationship between parental mediation and the influence of social media usage, cyberbullying and harassment on social media, and other phenomena related to its use by children and adolescences in the future.

Despite these enlightening contributions, the present research has several limitations. First, the parental mediation strategies that we identified and the scale that we validated are based on Singaporean samples. Therefore, future research must test the scale using samples from a number of different countries. Second, this research focuses only on children and adolescents and does not take into consideration emerging adults, such as college students,

who are also vulnerable to social media risks. The scale should be validated across different age groups. Third, while the present research has examined the categories of parental social media mediation, whether children understand and are willing to their parents' mediation strategies. Future studies could explore child obedience to parental social media guidance. Last, parental social media mediation may vary in managing children's use of different social media, such as social networking sites and online gaming. However, this research only identified the general parental mediation of social media. Future studies could examine and compare various parental mediation strategies on different social media sites.

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Further reading

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Tables and Figures

Table I.

The initial 17-item scale of parental social media mediation (child's version).

Constructs	ID	Items
Active mediation	AM1	How frequently do your parents tell you about the information you can disclose on social media?
	AM2	How frequently do your parents remind you not to give out personal information on social media?
	AM3	How frequently do your parents tell you to stop any experience on social media if you feel uncomfortable or scared?
	AM4	How frequently do your parents explain to you about the dangers of social media?
Restrictive mediation	RM1	How frequently do your parents restrict the type of social media platforms you can visit?
	RM2	How frequently do your parents set rules regarding your access to social media, such as Facebook, Twitter, YouTube, Instagram, WhatsApp, Line, etc.?
	RM3	How frequently do your parents limit the kind of activities you can do on social media?
	RM4	How frequently do your parents restrict the amount of time you can use social media?
	RM5	How frequently do your parents limit you to using social media only for schoolwork?
Authoritarian surveillance	AS1	How much do you agree that your parents ask you to share your social media account(s) and password(s) with them?
	AS2	How frequently do your parents log onto your social media account(s) to check your social media friends list?
	AS3	How frequently do your parents log onto your social media account(s) to check your conversations with others?
	AS4	How frequently do your parents log onto your social media account(s) to check the games you play?
	AS5	How frequently do your parents log onto your social media account(s) to check the pictures you post?
Non-intrusive inspection	NI1	How much do you agree that your parents know your social media account(s)?
	NI2	How frequently do your parents check your social media profile(s)?
	NI3	How frequently do your parents add you as a friend on social media to check what you post on social media?

Table II.

The initial 17-item scale of parental social media mediation (parent's version).

Constructs	ID	Items
Active mediation	AM1	How frequently do you tell your child about the information they can disclose on social media?
	AM2	How frequently do you remind your child not to give out personal information on social media?
	AM3	How frequently do you tell your child to stop any experience on social media if they feel uncomfortable or scared?
	AM4	How frequently do you explain to your child about the dangers of social media?
Restrictive mediation	RM1	How frequently do you restrict the type of social media platforms your child can visit?
	RM2	How frequently do you set rules regarding your child's access to social media, such as Facebook, Twitter, YouTube, Instagram, WhatsApp, Line, etc.?
	RM3	How frequently do you limit the kind of activities your child can do on social media?
	RM4	How frequently do you restrict the amount of time your child can use social media?
	RM5	How frequently do you limit your child to using social media only for schoolwork?
Authoritarian surveillance	AS1	How much do you agree that you ask you child to share their social media account(s) and password(s) with you?
	AS2	How frequently do you log onto your child's social media account(s) to check their social media friends list?
	AS3	How frequently do you log onto your child's account(s) to check their conversations with others?
	AS4	How frequently do you log onto your child's social media account(s) to check the games they play?
	AS5	How frequently do you log onto your child's social media account(s) to check the pictures they post?
Non-intrusive inspection	NI1	How much do you agree that you know your child's social media account(s)?
	NI2	How frequently do you check your child's social media profile(s)?
	NI3	How much do you agree that you add your child as a friend on social media to check what they post on social media?

Table III.

Model fit indices for each model.

Factor models	χ^2	df	χ^2/df	RMSEA	CFI	TLI
<i>Child sample</i>						
Null model	8,756.58***	120	72.97	0.23	0.00	0.00
One-factor model	4,272.51***	108	39.56	0.17	0.52	0.46
Three-factor model	806.98***	97	8.32	0.07	0.92	0.90
Four-factor model	390.95***	94	4.16	0.05	0.97	0.96
<i>Parent sample</i>						
Null model	10,239.30***	120	85.33	0.26	0.00	0.00
One-factor model	2,793.45***	99	28.22	0.15	0.73	0.68
Three-factor model	558.72***	96	5.82	0.06	0.95	0.94
Four-factor model	361.57***	93	3.89	0.05	0.97	0.97

Notes: RMSEA, root mean square error of approximation; CFI, Comparative fit index; TLI, Tucker-Lewis Index. *** $p < 0.001$

Table IV.Cronbach's α reliability and correlations in the child sample.

	Cronbach's α	CR	AVE	SRAVE	AM	RM	AS
AM	0.87	0.83	0.62	0.78			
RM	0.89	0.89	0.61	0.78	0.63		
AS	0.88	0.91	0.71	0.84	0.35	0.55	
NI	0.83	0.84	0.63	0.80	0.60	0.61	0.60

Notes: $n = 1,424$. AM, active mediation; RM: restrictive mediation; AS: authoritarian surveillance; NI: non-intrusive inspection; CR, composite reliability; AVE: average variance extracted values; SRAVE: the square root of AVE

Table V.Cronbach's α reliability and correlations in the parent sample.

	Cronbach's α	CR	AVE	SRAVE	AM	RM	AS
AM	0.89	0.90	0.74	0.86			
RM	0.92	0.92	0.69	0.83	0.67		
AS	0.95	0.96	0.84	0.92	0.44	0.61	
NI	0.89	0.89	0.73	0.86	0.54	0.61	0.85

Notes: $n = 1,206$. AM, active mediation; RM: restrictive mediation; AS: authoritarian surveillance; NI: non-intrusive inspection; CR: composite reliability; AVE: average variance extracted values; SRAVE: the square root of AVE

Table VI.

Descriptive statistics and factor loading for each observed variable.

Items	Factor loading	<i>M</i>	<i>SD</i>
<i>Child sample (n = 1,424)</i>			
AM2	0.81***	4.62	2.08
AM3	0.81***	4.33	2.08
AM4	0.86***	4.39	2.09
RM1	0.85***	3.48	2.11
RM2	0.82***	3.77	2.12
RM3	0.70***	3.74	2.16
RM4	0.80***	4.09	2.15
RM5	0.73***	3.09	2.07
AS1	0.61***	3.82	2.07
AS2	0.82***	2.67	2.10
AS3	0.77***	2.76	2.16
AS4	0.79***	2.67	2.12
AS5	0.81***	2.71	2.18
NI1	0.82***	3.64	2.24
NI2	0.83***	3.52	2.20
NI3	0.74***	3.74	2.28
<i>Parent sample (n = 1206)</i>			
AM2	0.84***	4.39	1.68
AM3	0.85***	5.01	1.71
AM4	0.88***	4.82	1.83
RM1	0.89***	4.98	1.71
RM2	0.86***	4.31	2.00
RM3	0.91***	4.46	1.98
RM4	0.75***	4.85	1.82
RM5	0.76***	4.00	2.04
AS1	0.80***	3.60	2.20
AS2	0.91***	3.06	2.10
AS3	0.91***	2.94	2.90
AS4	0.88***	2.92	2.11
AS5	0.91***	3.07	2.12
NI1	0.88***	3.75	2.21
NI2	0.89***	3.69	2.17
NI3	0.76***	4.01	2.23

Notes: AM, active mediation; RM, restrictive mediation; AS, authoritarian surveillance; NI, non-intrusive inspection. *** $p < 0.001$

Table VII.

Test result comparing parental mediation to children and adolescents.

	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
<i>Active mediation</i>						
Children	635	4.73	1.87	5.16	1,422	0.00
Adolescents	789	4.22	1.80			0.00
Children's parents	442	5.06	1.66	2.01	1,204	0.00
Adolescents' parents	764	4.87	1.54			0.04
<i>Restrictive mediation</i>						
Children	635	4.08	1.82	8.88	1,422	0.00
Adolescents	789	3.27	1.61			0.00
Children's parents	442	4.85	1.68	7.27	1,204	0.00
Adolescents' parents	764	4.13	1.66			0.00
<i>Authoritarian surveillance</i>						
Children	635	3.57	1.81	17.91	1,422	0.00
Adolescents	789	2.05	1.38			0.00
Children's parents	442	3.95	2.02	12.04	1,204	0.00
Adolescents' parents	764	2.63	1.72			0.00
<i>Non-intrusive inspection</i>						
Children	635	4.30	1.99	12.24	1,422	0.00
Adolescents	789	3.10	1.73			0.00
Children's parents	442	4.51	2.03	9.55	1,204	0.00
Adolescents' parents	764	3.41	1.86			0.00

Figure 1.

The resulting modified measurement model of parental mediation of social media.

