

# Understanding Factors Associated with Singaporean Adolescents' Intention to Adopt Privacy Protection Behavior Using an Extended Theory of Planned Behavior

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## Abstract

Using an extended theory of planned behavior (TPB), this study explores how the original TPB variables (attitude, subjective norms, and perceived behavioral control), personality traits, privacy concern, past privacy protection behaviors (PPBs), as well as parental mediation strategies relate to adolescents' intention to engage in privacy protection measures. We administered a cross-sectional survey to a nationally representative sample of adolescents ( $N=4,920$ ) in Singapore. The sample comprised 50.5 percent females and 49.5 percent males with age ranging from 13 to 21 years ( $M=14.73$ ). Results from the hierarchical regression analysis showed that the proposed extended TPB model received partial support. Subjective norms, among the TPB and other factors, have the strongest relationship with adolescents' intention to engage in PPBs on social network sites. Adolescents' privacy concern and their past PPBs are more important in influencing their future PPB compared with personality traits such as neuroticism and extraversion. Adolescents whose parents have engaged in regulated parental mediation are more likely to protect their privacy on SNSs compared with adolescents whose parents have adopted active mediation style.

**Keywords:** social network sites, adolescents, theory of planned behavior, privacy protection behavior, privacy concern

WITH THE PROLIFERATION of social network sites' (SNSs) use among adolescents, there is an increased concern about privacy violation on SNSs, particularly among teenagers who make up a sizeable portion of SNSs users. Adolescents are at risk of privacy violation—volunteering intimate details of their lives on SNSs, such as Facebook, Twitter, or Instagram, without consideration for how those information may be used by others with malicious or marketing intentions—as they are at a stage where they seek social approval through online self-disclosure. They may be pressured to post details of their daily lives to conform to what their friends do online or use SNSs for impression management to craft a desirable image of how they want to be perceived.<sup>1-3</sup>

This study aims to use a theory-driven approach—specifically through the lens of an extended theory of planned behavior (TPB) model—to understand the potential factors that might be associated with adolescents' intentions to engage in privacy protection behavior (PPB) on SNSs.

## Theoretical Framework—TPB

The TPB postulates that an individual's intention is the most proximal antecedent of actual behavior, and that attitude, sub-

jective norms, and perceived behavioral control are three factors that influence one's intention to perform a behavior.<sup>4</sup> Attitude refers to an individual's evaluation of a behavior—the more positive the evaluation is, the more likely the individual tends to engage in the behavior.<sup>5</sup> The second key construct in the TPB—subjective norms—is defined as the perceived prevalence of a behavior, and the perception that significant others want the individual to engage in the particular behavior.<sup>6</sup> The third factor is perceived behavioral control, which refers to individuals' perceived efficacy in carrying out the intended behavior.<sup>7</sup> Individuals are more likely to engage in a behavior that they are more confident of performing compared with a behavior that they feel they are not so competent at.<sup>7</sup>

Regardless of the contextual differences, the TPB has been found to consistently explain approximately 40 to 50 percent of the variance in intention.<sup>8</sup> Studies have found empirical support for the application of TPB to understand engagement in online PPB.<sup>9,10</sup> Despite this, our review of the literature suggests that the TPB framework can be extended to include three additional groups of factors—personality traits, privacy concern and past PPB, and parental mediation strategies—in the context of online PPB among adolescents. These will be elaborated in the following sections.

**Extending TPB: Personality Traits**

First, we propose that the TPB framework could be extended with personality traits when understanding adolescents' intention to engage in SNSs PPB, as personality may reflect SNSs users' online activities and behaviors.<sup>11</sup> Scholars have identified that personality comprises five main traits—openness, conscientiousness, agreeableness, extraversion, and neuroticism—and that these traits are likely to be universal.<sup>12,13</sup>

With regard to SNSs PPB, *neuroticism* and *extraversion* appear to be most related to self-presentation and self-disclosure motivations and behaviors.<sup>14</sup> Neuroticism refers to the emotional instability of an individual. Individuals with high neuroticism typically experience a myriad of negative feelings, such as depression, nervousness, and sensitivity to conflict and rejection, while those with low neuroticism are calmer, more relaxed, and handle stress better.<sup>14</sup> Extraversion refers to the *extroverted* qualities in an individual, characterized by traits such as assertiveness, an outgoing nature, and high levels of enthusiasm.

There are a number of reasons as to why neuroticism and extraversion might be more important in self-presentation and self-disclosure motivations. First, due to their low self-esteem, neurotic individuals tend to believe that SNSs can provide opportunities for them to get attention and support in a way that they are less confident of offline.<sup>14,15</sup> The desire to connect might influence neurotic individuals to disregard SNSs PPB. However, there remains some ambiguity regarding the direction of the relationship,<sup>11,14</sup> hence, a research question has been put forth in this study regarding their relationship.

Second, extroverted individuals might be more comfortable sharing their lives online, leading to less concern for SNSs PPB.<sup>14</sup> Research has shown that individuals with high extraversion access SNSs more frequently, spend longer time using it, have more friends, and use SNSs to communicate with friends.<sup>14,16</sup> Hence, we have included them in the extended TPB predicting PPB, since PPB is closely related to self-presentation and self-disclosure motivations and behaviors.

**Extending TPB: Privacy Concern and Past PPB**

In addition to personality variables, we argue that it is also important to account for privacy concern as well as past PPB when examining adolescents' future intention to engage in privacy protection. Privacy concern is defined as the apprehension over how one's data will be used, and past research has shown that a positive relationship between the level of privacy concern and privacy measures exists individuals with higher concerns are more likely to curtail sharing of information online.<sup>17–19</sup> Moreover, as past media consumption patterns often reinforce and explain future media habits, adolescents who have had experiences in using privacy measures are more likely to do so in the future.<sup>20</sup>

**Extending TPB: Parental Mediation Strategies**

We propose that the TPB framework can be extended with parental mediation strategies—active and regulated mediation—when examining adolescents' intention to engage in PPB. Studies have highlighted the importance of

the role of parents in understanding adolescents' SNSs usage.<sup>1,21</sup> Particularly, how parents engage their teenagers in media use are often the interest of communication scholars as such strategies can mitigate potential negative effects of media,<sup>22–24</sup> especially online risks such as exploitation of information divulged by adolescents.<sup>25</sup>

Broadly, there are two main types of parental mediation strategies, known as active and regulated mediation.<sup>26</sup> Active parental mediation strategies involve parents engaging in bidirectional discussions with their child on why they should or should not engage in certain behaviors online.<sup>27</sup> On the other end of the spectrum is regulated mediation, which refers to parents setting limits and rules on adolescents' media usage, with significantly less explanation and reasons given.<sup>25</sup> Although studies have found that active parental mediation is more effective than regulated mediation in safeguarding child's disclosure of online information,<sup>28</sup> regulated mediation may also have an effect on adolescents' intention to engage in PPB, as it is still better than a case of no mediation.<sup>29</sup>

Based on our literature review, we postulate the following hypotheses and research questions (the conceptual framework of the extended TPB model is illustrated in Fig. 1):

**H1: Attitude is positively associated with adolescents' intention to engage in PPB.**

**H2: Subjective norms are positively associated with adolescents' intention to engage in PPB.**

**H3: Perceived behavioral control is positively associated with adolescents' intention to engage in PPB.**

**RQ1: How will neuroticism be associated with adolescents' intention to engage in PPB?**

**H4: Extraversion is negatively associated with adolescents' intention to engage in PPB.**

**H5: Privacy concern is positively associated with adolescents' intention to engage in PPB.**

**H6: Past PPB is positively associated with adolescents' intention to engage in PPB.**

**H7: Active parental mediation is positively associated with adolescents' intention to engage in PPB.**

**H8: Regulated parental mediation is positively associated with adolescents' intention to engage in PPB.**

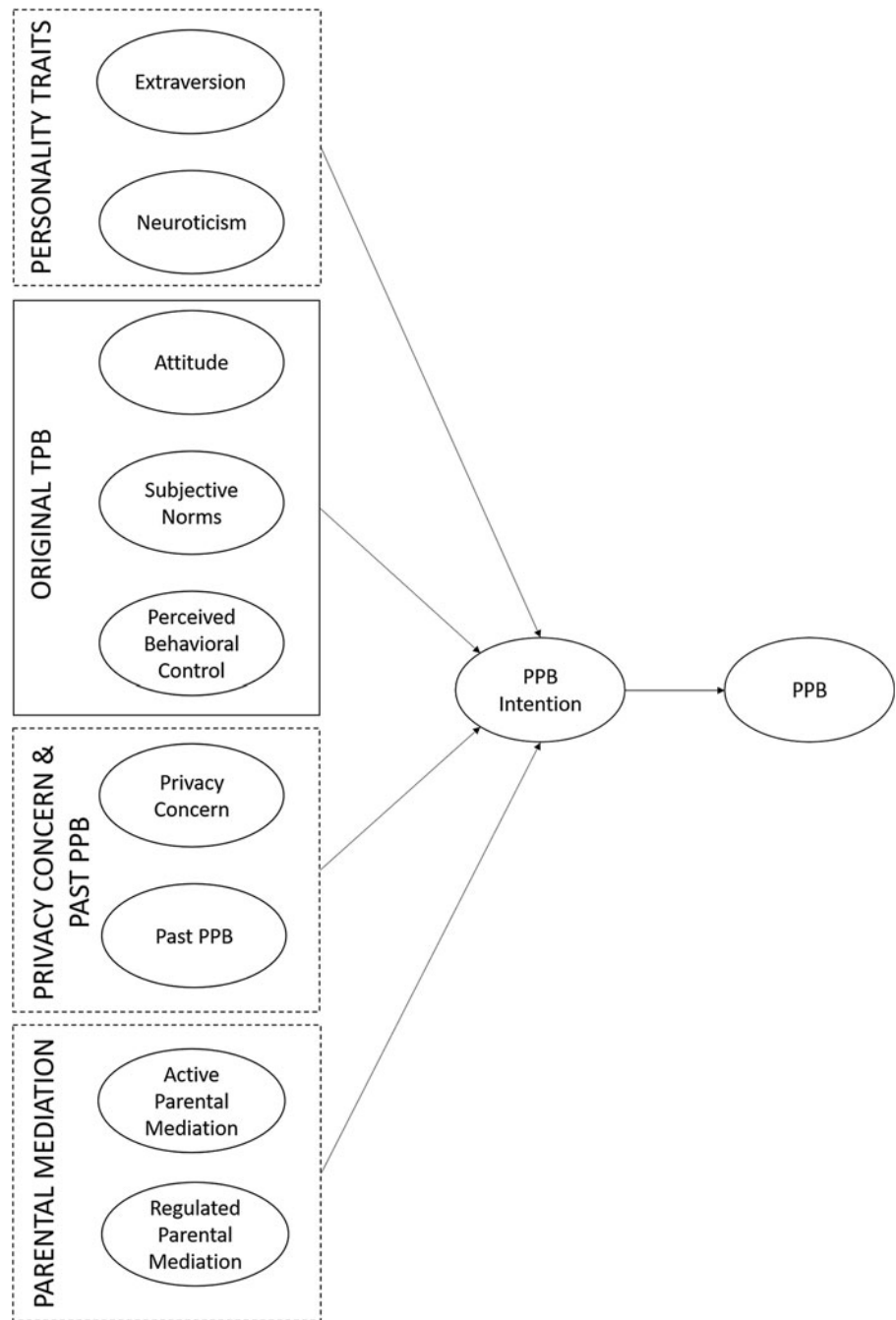
**Methods**

We administered a paper-and-pencil survey to a nationally representative sample of adolescents aged 13 to 19 in Singapore, comprising a mix of secondary school (aged between 13 and 17) and junior college students (aged between 17 and 19). Multistage cluster sampling was used to recruit adolescents from secondary schools, while simple random sampling was used to recruit adolescents from junior colleges. The total sample size of our study was 4,920 students.

Our sample comprised 50.5 percent females ( $n=2,485$ ) and 49.5 percent males ( $n=2,435$ ) with age ranging from 13 to 21 years (median [Mdn]=14,  $M=14.73$ ).

The ethnic proportions of our sample were comparable with the statistics reported in the 2010 national census, in

**FIG. 1.** Conceptual framework for the extended TPB in the context of adolescent online PPB (dotted lines illustrate the additional variables proposed to extend the original TPB model). PPB, privacy protection behavior; TPB, theory of planned behavior.



which 80 percent were Chinese, 11.4 percent were Malay, 4.1 percent were Indian, and 4.4 percent were from the other ethnic groups.<sup>a</sup> Before conducting the survey, approval was obtained from both the university’s Institutional Review Board (IRB-2014-04-39) and the Singapore’s Ministry of Education [RQ127-14(07)], along with informed parental consent and child assent.

**Measures**

**Demographics.** Demographic variables were used as control variables, they included *age*, *gender*, *education* (ranging from 1=“Secondary 1” to 7=“Year 2 of Junior College”; Mdn=4.00 or “Secondary 4”), and *ethnic groups*.

TPB variables. Attitude, subjective norms, perceived behavioral control, and intention were adapted from previous studies,<sup>30</sup> and they were measured on a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Some examples of the items are as follows: (a) “It is beneficial to engage in PPB on SNSs (attitude)”; (b) “Most people who are important to me engage in PPB on SNSs (subjective norms)”; (c) “It is possible for me to engage in PPB on SNSs (perceived behavioral control)”; and (d) “I intend to engage in PPB on SNSs in the next month (intention).” The five items for *attitude* ( $M=5.09$ ,  $SD=1.22$ , Cronbach’s  $\alpha=0.82$ ), six items for *subjective norms* ( $M=4.74$ ,  $SD=1.35$ , Cronbach’s  $\alpha=0.93$ ), four items for perceived behavioral control ( $M=5.23$ ,  $SD=1.44$ , Cronbach’s  $\alpha=0.94$ ), and three items

TABLE 1. MEASUREMENT ITEMS AND DESCRIPTIVE STATISTICS

	M	SD	$\alpha$
Attitude toward PPB			
How much do you agree with the following statements? (1 = Strongly Disagree, 7 = Strongly Agree)	5.09	1.22	0.82
1. It is good to engage in PPB on SNSs			
2. It is valuable to engage in PPB on SNSs			
3. It is enjoyable to engage in PPB on SNSs			
Subjective norms toward PPB			
How much do you agree with the following statements? (1 = Strongly Disagree, 7 = Strongly Agree)	4.74	1.35	0.93
1. Most people who are important to me check SNSs regularly			
2. Many people like me engage in PPB on SNSs			
3. The people whose opinions I value engage in PPB on SNSs			
4. Most people who are important to me think that I should engage in PPB on SNSs			
5. It is expected of me that I engage in PPB on SNSs			
Perceived behavioral control toward PPB			
How much do you agree with the following statements? (1 = Strongly Disagree, 7 = Strongly Agree)	5.23	1.44	0.94
1. It is possible for me to engage in PPB on SNSs			
2. It is easy for me to engage in PPB on SNSs			
3. If I wanted to, I could engage in PPB on SNSs			
4. It is mostly up to me whether or not I engage in PPB on SNSs			
Intention to engage in PPB			
How much do you agree with the following statements? (1 = Strongly Disagree, 7 = Strongly Agree)	4.78	1.66	0.96
1. I intend to engage in PPB on SNSs in the next month			
2. I will try to engage in PPB on SNSs in the next month			
3. I plan to engage in PPB on SNSs in the next month			
Personality traits			
How much do you agree with the following statements? (1 = Strongly Disagree, 5 = Strongly Agree)			
Neuroticism			
I am someone who...	3.01	0.63	0.70
1. Is depressed			
2. Is relaxed, handles stress well (reverse coded)			
3. Can be tensed			
4. Worries a lot			
5. Can be moody			
6. Remains calm in tensed situations (reverse coded)			
7. Gets nervous easily			
Extraversion			
I am someone who...	3.22	0.66	0.75
8. Is talkative			
9. Is reserved (reverse coded)			
10. Is full of energy			
11. Generates a lot of enthusiasm			
12. Tends to be quiet (reverse coded)			
13. Has an assertive personality			
14. Is sometimes shy, inhibited (reverse coded)			
15. Is outgoing, sociable			
Privacy concern			
(1 = Not concerned at all, 5 = Very concerned)	3.72	0.99	0.90
1. How concerned are you that your personal data may be used for purposes other than the reason you provided the information for?			
2. How concerned are you about your online personal privacy on SNSs?			
3. How concerned are you about the fact that SNSs might know/track the sites you visited?			
4. How concerned are you about SNSs sharing your personal information with other parties?			

(continued)

TABLE 1. (CONTINUED)

	M	SD	$\alpha$
Past PPB			
How often do you do the following? (1=I never do this, 5=I always do this)	3.01	0.67	0.79
1. I provide some false personal information to set up accounts			
2. I provide some false personal information on my profile			
3. I regularly review personal settings on my SNSs accounts			
4. I monitor my profile(s)			
5. I am careful about the pictures I post of myself on my profile			
6. I un-tag pictures			
7. I am careful about what groups I join			
8. I "google" myself regularly			
9. I control my privacy settings so that only my friends can see my profile			
10. I delete messages posted on my SNSs accounts			
11. I use privacy controls on SNSs to allow me to filter which friends group sees different details of my profile			
Active parental mediation			
How often do your parents do the following? (1=Not at all, 5=All the time)	2.66	1.12	0.90
1. Explain to you about strangers on the Internet			
2. Explain to you what to do when encountering messages from unknown people			
3. Explain to you how to end uncomfortable online experiences			
4. Explain to you how to monitor friends' list on SNSs			
Regulated parental mediation			
How often do your parents do the following? (1=Not at all, 5=All the time)	2.32	1.09	0.89
1. Limit what you can do on the Internet without explaining why			
2. Limit the type of websites you are able to visit without explaining why			
3. Limit the amount of time you can go online without explaining why			
4. Tell you the specific days and times where you can go online without explaining why			

PPB, privacy protection behavior; SNSs, social network sites.

for *intention* ( $M=4.78$ ,  $SD=1.66$ , Cronbach's  $\alpha=0.96$ ) were averaged to form reliable composite indices.

**Personality traits.** Neuroticism was measured by using eight items, in which respondents were asked on a five-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) on how agreeable they were with the statements such as: "I am someone who is depressed." Extraversion was also measured using eight items, in which respondents were asked how agreeable they were with statements such as: "I am someone who is talkative." The questions were adapted from previous studies,<sup>31</sup> and they were averaged to form *neuroticism* ( $M=3.01$ ,  $SD=0.63$ , Cronbach's  $\alpha=0.70$ ) and *extraversion* ( $M=3.22$ ,  $SD=0.66$ , Cronbach's  $\alpha=0.75$ ).

**Privacy concern.** Privacy concern was measured by using four items, in which respondents were asked on a five-point scale ranging from 1 (*not concerned at all*) to 5 (*very concerned*), how concerned they were with scenarios such as: "...that your personal data may be used for purposes other than the reason you provided the information for?" The four items were adapted from previous studies<sup>19</sup> and were averaged to form the composite index called *privacy concern* ( $M=3.72$ ,  $SD=0.99$ , Cronbach's  $\alpha=0.90$ ).

**Past PPB.** Past PPB was measured using 11 items, in which respondents were asked on a five-point scale ranging from 1 (*I never do this*) to 5 (*I always do this*) on how often they did the following, such as: "I regularly review personal

settings on my SNSs accounts." The measures were adapted from a previous study,<sup>32</sup> and the items were averaged to form a composite index for *past PPB* ( $M=3.01$ ,  $SD=0.67$ , Cronbach's  $\alpha=0.79$ ).

**Active parental mediation.** Active parental mediation was measured using four items, in which respondents were asked on a five-point scale ranging from 1 (*not at all*) to 5 (*all the time*) on the frequency with which their parents did the following, such as: "Explaining to you how to end uncomfortable online experiences." The four items were adapted from previous studies,<sup>28,33</sup> and they were averaged to form a composite index for *active parental mediation* ( $M=2.66$ ,  $SD=1.12$ , Cronbach's  $\alpha=0.90$ ).

**Regulated parental mediation.** Regulated parental mediation was measured using four items, in which respondents were asked on a five-point scale ranging from 1 (*not at all*) to 5 (*all the time*) on the frequency with which their parents did the following, such as: "Limit what you can do on the internet without explaining why." The four items were adapted from previous studies<sup>28,34,35</sup> and were averaged to form a composite index for *regulated parental mediation* ( $M=2.32$ ,  $SD=1.09$ , Cronbach's  $\alpha=0.89$ ). A summary of all the key-extended TPB measures can be found in Table 1.

#### Analytical approach

The data were analyzed using hierarchical ordinary least squares regression analysis, where the independent variables

were entered in sequential blocks based on the presumed causal order. We entered demographic variables first, followed by personality variables (neuroticism and extraversion) in the second block, TPB items (attitude, subjective norms, and perceived behavioral control) in the third block, privacy concern and past PPB in the fourth block, and active and regulated parental mediation in the last block.

**Results**

Table 2 shows the final standardized beta coefficients obtained from the hierarchical regression analysis. The demographic measures alone accounted for 4.9 percent of the total variance in privacy behavioral intention. H1 to H3 postulated that the TPB variables would be positively associated with privacy intention. The results showed that attitude ( $\beta=0.13, p<0.001$ ), subjective norms ( $\beta=0.40, p<0.001$ ), and perceived behavioral control ( $\beta=0.23, p<0.001$ ) were positively associated with privacy behavioral intention, thus supporting H1 to H3. The three variables accounted for 49.60 percent of the variance explained in intention.

Next, results showed that neither neuroticism nor extraversion was significantly associated with privacy behavioral intention. Thus, RQ1 and H4 were not supported. This block accounted for 0.20 percent of the variance explained in privacy behavioral intention. H5 and H6 postulated that privacy concern ( $\beta=0.04, p<0.001$ ) and past PPB ( $\beta=0.07,$

$p<0.001$ ) were positively associated with privacy behavioral intention and the results supported the two hypotheses. Both variables explained 0.80 percent of the variance in the dependent variable.

H7 and H8 postulated that active and regulated parental mediation was positively associated with privacy protection behavioral intention. Regulated parental mediation ( $\beta=0.03, p<0.001$ ), but not active parental mediation, was positively associated with the dependent variable. H8, but not H7, was supported. This block accounted for 0.10 percent of the variance in intention. In total, 55.70 percent of the variance was explained by all the independent variables.

**Discussion**

Overall, this study has found some support for the extended TPB in understanding factors associated with adolescents' intention to engage in PPB on SNSs. The original TPB variables accounted for 49.60 percent of the variance explained in the dependent variable, with the additional variables adding a total of 1.10 percent of the variance explained. This was a small but significant increase, suggesting that while the additional variables do have an effect on intention in engaging in PPB, the main TPB variables remain as the important variables for researchers to consider.

Nonetheless, the study highlighted three key results. First, while the strongest effects came from the three TPB

TABLE 2. HIERARCHICAL OLS REGRESSION ANALYSIS FOR PRIVACY PROTECTION BEHAVIORAL INTENTION

Independent variables	$\beta$	B	SE B	CI	
				Lower	Upper
<b>Block 1: Demographics</b>					
Age	-0.04***	-0.04	0.01	-0.06	-0.01
Gender	0.04***	0.11	0.02	0.08	0.15
Education	0.06***	0.05	0.01	0.03	0.07
Ethnic groups					
Malay	0.02	0.10	0.03	0.04	0.17
Indian	0.00	-0.01	0.04	-0.09	0.07
Others	0.00	0.00	0.04	-0.09	0.08
Incremental R <sup>2</sup> (%)					4.90***
<b>Block 2: Personality</b>					
Neuroticism	0.01	0.02	0.02	-0.01	0.05
Extraversion	-0.02	-0.04	0.01	-0.07	-0.01
Incremental R <sup>2</sup> (%)					0.20***
<b>Block 3: TPB</b>					
Attitude	0.13***	0.19	0.01	0.16	0.21
Subjective norms	0.40***	0.51	0.01	0.49	0.53
Perceived behavioral control	0.23***	0.28	0.01	0.26	0.30
Incremental R <sup>2</sup> (%)					49.60***
<b>Block 4: Privacy concern and past PPB</b>					
Privacy concern	0.04***	0.07	0.01	0.05	0.09
Past PPB	0.07***	0.19	0.02	0.16	0.22
Incremental R <sup>2</sup> (%)					0.80***
<b>Block 5: Parental mediation strategies</b>					
Active parental mediation	0.00	0.00	0.01	-0.02	0.02
Regulated parental mediation	0.03***	0.05	0.01	0.03	0.07
Incremental R <sup>2</sup> (%)					0.10***
Total R <sup>2</sup> (%)					55.70***

N=4,920; Cell entries for all models are final standardized regression coefficients for all blocks. Male was used as the reference category for gender (with "male" responses being coded as 1 and "female" responses being coded as 2), while Singaporean Chinese was used as a reference category among the dummy variables of race.

\*\*\* $p<0.001$ .

OLS, ordinary least squares; TPB, theory of planned behavior.

variables, subjective norms have the strongest relationship with adolescents' intention to engage in PPB on SNSs. Next, our study showed that privacy concern and past PPB have a small effect on intention to engage in PPB. In addition, adolescents whose parents adopted regulated parental mediation strategies are marginally more likely to engage in PPB. In contrast, the relationship between active parental mediation and adolescents' privacy adoption intention was nonsignificant.

One of the more significant findings in our study is that it is important to adopt a norms-based approach,<sup>36</sup> when motivating adolescents to adopt PPB on SNSs through media literacy programs. This is evident from our findings, in which subjective norms ( $\beta=0.40$ ,  $p<0.001$ ) have the strongest relationship with intention among all other antecedents. Friends' opinions matter most at the adolescence stage.<sup>38</sup> This implies that apart from targeting adolescents by informing them on how to set privacy filters on SNSs (i.e., a form of perceived behavioral control), media literacy programs should aim to underscore the prevalence of PPB in one's social network and the message that most people—especially those such as the adolescents themselves—would approve of them to engage in similar PPB.

Leveraging on the affordances of social media, communication practitioners could develop bite-size videos on privacy protection measures and disseminate them on social media. When such videos are shared among one's social networks, it is an indirect way that propagates subjective norms (i.e., "If my friends share this video with me, it must be a sign that they would approve of me doing the same thing"). By reaching out to groups of adolescents instead of the individual, media literacy program planners are able to leverage on the power of positive peer pressure on social media.

Our study found no significant relationship between the personality traits of extraversion and neuroticism on intention to engage in PPB. There are several possible reasons for this. First, previous studies have examined these personality traits within the context of self-disclosure and self-presentation, and not in the context of PPB.<sup>11,14</sup> Moreover, even within the context of self-disclosure, extraversion's effects on self-disclosure is mixed.<sup>11,14</sup> Likewise, neuroticism has been found to be unrelated to the uploading of personal information online.<sup>11</sup> Our study adds to the literature, and suggests that the personality traits of extraversion and neuroticism might have no relationship with PPB. Further research is required to confirm this.

With regard to the relationship between privacy concerns and intention to engage in PPB, our study supports previous research that has found privacy concern to be a driver of PPB.<sup>17,18</sup> It is interesting to note that the size of the relationship found is smaller compared with previous studies, which were conducted among undergraduates.<sup>17</sup> It is possible that our sample, consisting of adolescents, has a greater propensity to engage in risky behaviors than undergraduates due to less developed impulse control systems.<sup>39</sup> Hence, privacy concerns might translate less into intention to engage in PPB.

Our study showed that parents have a small role to play in engaging adolescents in PPB. Specifically, our findings show that adolescents whose parents adopt a more regulated form of mediation strategies are more likely to engage in privacy protection, compared with adolescents' whose parents engaged in active mediation. This suggests that during adolescence, parents do need to be firm when communicating with their teenagers on the importance of applying privacy filters and

setting clear boundaries for them. Despite this, it is important to note that the effect of regulated parental mediation strategies on intention to engage in PPB is very small ( $\beta=0.03$ ,  $p<0.001$ ) compared with previous studies.<sup>38</sup> This suggests that the role parents play in adolescents' intention to engage in PPB is smaller compared with other contexts and with younger age groups.<sup>28,38</sup>

#### Limitations and future research

There are some limitations to our research. First, causality cannot be inferred due to the cross-sectional nature of the study. Future research should consider adopting a longitudinal approach and explore the causal claim of the extended TPB model, and how PPB changes in adolescents. Second, teenagers may be more discretionary in releasing details of their lives on SNSs platforms if their parents are users compared with platforms where their parents are unaware of—this we did not control for in our study. Future studies should consider including this as an additional control variable to improve the rigor of the statistical analyses.

Third, our study took into account general PPB behaviors and did not differentiate between them. Previous studies have highlighted how different PPB can be driven by different factors.<sup>18</sup> Future studies should build on the findings of this study by explicating the different types of PPB and finding out how the antecedents identified in this study relate to them. Despite this, this study has made several contributions to research in adolescents and SNSs PPB. In terms of theoretical contributions, the extended TPB framework received partial empirical support, and demonstrated that privacy concern, past privacy behaviors, and regulated parental mediation strategies can be considered as additional antecedents of adolescents' future PPB.

#### Note

- a. Due to rounding error, the percentages do not add up to 100%.

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