Public Understanding of Adolescents’ Risks on Facebook in Taiwan

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Abstract: An increasing number of parents and scholars have begun expecting schools and the government to share the responsibility of reducing the potential negative effects of SNS use among adolescents. This study examines how the public understands the risks that adolescents face, as well as the causes and solutions, and how news media influence not only the public’s risk perceptions but also their policy preference for public interventions. Drawing on framing and attribution theories, this study used two datasets. First, the content analysis data explore Taiwanese news media’s coverage of youths’ online behaviors and how the media has framed the question “Who is responsible for adolescents’ risky and opportunity behaviors?” Second, the public opinion survey data addresses the influence of news consumption on the public perception of the risks facing adolescent Facebook users, the public’s attribution of related responsibilities to various stakeholders, and the public’s evaluation of parental mediation and government regulations.

Keywords: adolescents; online risks; news framing; attribution of responsibility; parental mediation; government regulations

1. Introduction

Social networking sites (SNS) allow adolescents to post online representations of themselves and exert symbolic (content) and practical (access) control over their online presence [1]. This empowerment in socialization and relation-building capacity has made SNS increasingly popular among adolescents worldwide. According to the Taiwan Communication Survey [2] in 2017, 98.8% adolescents were regular SNS users and, among these, 84.4% accessed SNS via a smartphone. Facebook (94.9%) and YouTube (97.4%) were the most popular, followed by Instagram (68.1%) and Twitter (16.4%).

The potential negative effects of social media on such users, particularly their social relationships, have raised concerns among researchers, educators, regulators, parents, child welfare professionals, and the general public. Parental mediation has limited effects for social media, particularly if parents lack ICT (information and communication technology) skills, while the mobility of smartphones [3,4] and children’s unwillingness to accept their parents’ friend requests on Facebook [3,5] are also contributing factors.

An increasing number of parents and researchers have begun expecting schools and the government to share these responsibilities, either by enforcing school rules or government regulations to restrict the industry [3,6]. Kelly [7] deems discourses on at-risk youth as “politics of risk” that seek to individualize institutionally structured risks and assign new forms of responsibility to young people and their families. According to Owen [8], news media and experts are (re)producing a “moral panic” among the public and offering new sites for political and economic governance in the neoliberal countries of the Global North. As SNS is a new technology, the risks faced by the youth have become a battlefield of competing values and conflicting interests.

However, whether the public supports school and government interventions remains unclear. Public understanding of the risks adolescents face, as well as the causes and solutions, are critical areas of inquiry. Therefore, the first aim of this study is to explore how the...
public understands the risks adolescents face on social media, and to what extent “moral panic” exists among the public. Additionally, this study examines how the public understands the question “who is responsible for online risks”, and how the public evaluates the effectiveness of adolescents’ risk-coping skills, parental mediation, and public regulations.

The second aim of this study is to examine how public understanding is related to the cultural construction of adolescents. According to the social constructive perspective of cultural studies, public perceptions of online children’s risks are constructed by the dominant understandings of adolescents’ nature and agency. Public discourses on adolescents generally deem them as “not yet” adults who require supervision to become responsible members of the 21st century workforce [8,9]. The youth-at-risk discourse encompasses all youthful behaviors and dispositions, including their online behaviors [7,8,10].

However, whether this traditional theme has been adopted by the public and the news media to evaluate risks on social media still lacks empirical evidence. Some researchers [11,12] found that news media of children’s use of ICT is generally positive because both the industry and government have been using this discourse to sell their products and policies to the public. Modern constructivist paradigms believe that adolescents are independent and active media users who fulfill their needs and make meanings out of their social experiences. These contradictory viewpoints raise many questions that this study aims to answer, as follows: is there a “media panic” in terms of the risks facing youth on social media, and how has the mass media framed the societal versus individual responsibilities of this issue?

Thirdly, this study aims to obtain an understanding of what role news media play in framing the societal versus individual responsibilities of the issue. Employing frame-setting theory, this study examines the effects of news media on both the public perception of the risks and their policy preference for public interventions. The lack of empirical evidence renders it inappropriate to blame the news media for (re)producing public perceptions of risks facing young social media users.

This study fulfills the above aims using two datasets. First, the content analysis data explore Taiwanese news media’s coverage of youth risk and opportunity behaviors on social media. In addition, the data were used to explore how the media has framed the question, “Who is responsible for adolescents’ risky and opportunity behaviors?” Second, the public opinion survey data address public perception of the risks facing adolescent Facebook users, the public’s attribution of related responsibilities to various stakeholders, as well as the public’s evaluation of parental mediation and government regulations. The relationships between news consumption and these variables are examined to shed light on the contribution of the news media to the public understanding of this issue. Taiwan has one of the world’s highest penetration rates of social media and Facebook, which makes it an ideal test-bed for many hypotheses on the societal impacts of social media [13].

2. Literature Review and Hypotheses
2.1. Social Construction of Adolescence and News Frames

Adolescence is a transitional stage from childhood to adulthood [7]. While it is a biological process like childhood, the conceptions of adolescence have been socially constructed by adults [7,14]. They are considered to be “at-risk” if their life circumstances threaten normative developmental experiences necessary to perform healthy adult functions, such as securing employment and starting a family [7]. The center of the social construction of childhood is children’s nature, agency, best interests, and needs [15,16].

Media frames are aspects of perceived reality that the mass media selects and emphasizes “to promote a particular problem definition, causal interpretation, moral evaluation and/or treatment recommendation” [17]. Frame analysis can elucidate the societal perceptions of key issues [18]. Identifying the causes underpinning media frames will provide insight into the treatments for the problems and predict their likely effects [17]. News frames usually build on social norms and cultural values [18,19], as journalists unconsciously rely on commonly shared frames [20].
The literature on youth and the Internet has been framed using the concepts of risks and opportunities [21]. Davidson and Martellozzo [22] refer to online risks as online behaviors that may damage the mental and physical health of children. Adolescents’ engagement in such online behaviors is indicative of victimization [23]. In line with the above definition, online opportunities are behaviors that may benefit children’s mental and physical health, such as receiving, downloading, and distributing useful information.

However, Livingstone and Helsper [24] admit that the definition of risks and opportunities accords with the “approved” definition of adults in policy debates. The problematization of social media is largely legitimized by an authoritative voice, such as those of academics and experts [25]. Many of the risk behaviors listed by adults are positive in nature and are perceived as opportunities by teenagers (e.g., making new friends online, giving out personal information, or even viewing pornography).

In fact, benefits and damages are subjective and are based on the understanding of children’s best interests and needs, which are also socially constructed [15]. Although the social psychology of adolescence emphasizes the importance of a social network of peers for adolescents, in modern societies, the parental fear of strangers has incrementally reduced unsupervised public spaces for adolescents [26]. Stern and Odland [27] found that the news media consistently defines adolescents’ use of social media as dysfunctional, unhealthy, and dangerous, with little discussion on self-expressive, creative, and communicative practices.

Nevertheless, recent studies on adolescents’ use of social media have begun recognizing their needs in developing, maintaining, and presenting both self and subcultural identities within the virtual world via social media [28]. Recent years have also seen increased academic attention toward the role of social media in adolescents’ exploration of sexuality, construction of sexual identity, and development of romantic and sexual relationships with peers [29]. Regarding the public’s risk and opportunity perceptions, this study asked the following two research questions:

RQ1: How has the public perceived adolescents’ use of social media? and RQ2: How has the news media reported the risks and benefits of adolescents’ use of social media?

2.2. The Cultural Construction of Adolescents’ Nature

The social construction of adolescents’ nature has been reflected in three types of media discourses as follows: good, evil, and “blank” [30]. The good-nature discourse claims that children are innocent and pure, whereas evil ones suggest that children have inherently sinful and deviant natures and need training and discipline [31]. However, in the study of children’s use of ICT, the good nature discourse portrays child computer users mainly as “victims” who are innocent, ignorant, and inadvertently exposed to online risks [11]. This discourse surrounds adolescents’ use of social media and, particularly, sexting and cyberbullying [25,32].

The evil nature discourse depicts child computer users with the image of being “dangerous” [11,12]. They are described as active and aggressive users who are always at the risk of harming both themselves and others. Since their nature is deviant, hedonistic, and lacking learning motivation, they are empowered in undesirable and anti-social ways by ICT [10].

Echoing the long history of youth-related concerns, substantial empirical research discusses the negative outcomes of adolescents’ use of social media on physical and psychological well-being [33]. Since adolescents’ media use has traditionally been constructed by society as risks rather than opportunities, this study poses the following hypotheses:

Hypotheses 1 (H1). Survey respondents perceived more risky behaviors than opportunity-based ones when describing social media activities that adolescents engage in.

Hypotheses 2 (H2). The news media present more risk behaviors than opportunity-based ones when covering adolescents’ use of social media.
2.3. The Cultural Construction of Adolescents’ Agency

The social construction of children’s agency addresses questions about children’s activities and abilities to choose and control events around them [16]. Research on social media and the youth largely focuses on control and resistance in parent–child power relations [21]. Modern constructivist paradigms, a new alternative perspective, highlight the role of children as social actors and meaning makers. Under this perspective, children are seen as active and independent participants in their physical and social environment [14,16]. To this effect, social media is considered a tool that empowers young people to harness discursive agency and social mobility in peer relationships [32]. The Internet has decentralized parental control by allowing children to freely enter the traditionally denied information world [26]. The wide adoption rate of smartphones has further liberated adolescents from parental control.

However, the traditional and dominant construction of children’s agency emphasizes the role of social and familial structures in shaping children’s lives [14]. From this viewpoint, children are often defined as incomplete, vulnerable, and passive, and are said to have limited control over their family and school lives. As a result, they are in need of protection and must obey adults [7,8,15,26,31]. Traditional Confucian cultures also emphasize parental control, family duties, and obedience to parents’ authority and demands [34].

Past research classifies the media framing of responsible stakeholders into the following four categories: adolescent users, their parents, larger social institutions, such as schools, and the government [12,35,36]. Kim and Telleen [35] find that victims and their families are most often cited as causes of bullying at school. Young et al. [36] note that schools are often attributed to the blame for bullying. The present study separates the framing of responsibility between adolescents because, in the social construction literature, adolescents differ by nature from their parents, who are fully-grown adults.

Research has extensively explored factors contributing to adolescents’ risky online behavior. Notten and Nikken [23] classified these factors into the following three categories of characteristics: individual (e.g., sensation seeking and digital skills), familial (e.g., parents’ education, household composition, and parental mediation), and societal (e.g., Internet adoption rate and cultural differences). These three categories coincide with how the media frames who is responsible for online risks, that is, youth users, their parents, schools, and the government. Thus, the related research questions are as follows:

RQ3: How has the public interpreted the question, “Who is responsible for adolescents’ risks on social media?” and RQ4: How has the news media presented the question “Who is responsible for adolescents’ risks on social media?”

Stern and Odland [27] contend that news coverage of adolescents and social media denies adolescents’ agency and obscures the diversity of their experiences and social media practices. Online strangers, cyberbullying, hacking, and sexting have been used to legitimize adult surveillance and control over virtual reality [10,21]. Since adolescents’ agency has traditionally been constructed by the society as incomplete and passive rather than independent and active, the related hypotheses are as follows:

Hypotheses 3 (H3). The respondents of the public opinion survey attribute the causes and solutions more often to adults than to adolescents.

Hypotheses 4 (H4). The news media attribute the causes and solutions more often to adults than to adolescents.

2.4. Consequences of the Frame-Setting Effects

The attribution of responsibility is a form of social knowledge that shapes individuals’ opinions and political attitudes toward policy solutions [37]. The causal diagnosis and treatment functions of an individual’s frame should be logically consistent. Diagnosing the causes of media frames entails the identification of forces creating the problem and logically linked remedies for media frames offering and justifying treatments for the problems, as well as the prediction of their likely effects [17]. When the responsibility falls
on individual actors involved in the problem (e.g., adolescents and their parents), the social issue is expected to be resolved through individual-level changes rather than larger social conditions or public policies [38]. Therefore, the media framing of responsibility plays an important role in generating public expectations of solutions for online risks.

As previously mentioned, the characteristics of adolescent users (i.e., age, gender, and personality), lack of Internet skills, and inappropriate coping strategies for online risks are causes of online risks typically considered in the context of users [24]. Additionally, ineffective parental mediation results in families being held responsible. Finally, the lack of mediation policies, teacher training, school funding to effectively address online risks, risk-mitigation legislation, and law enforcement, among others, are often cited in reference to schools and the government. Focusing on four major solution areas—adolescents’ coping skills, parental mediation, school regulations, and government interventions—this study proposes the following hypotheses:

**Hypotheses 5 (H5).** Individuals’ risk and opportunity perceptions have significant relationships with their evaluation of youths’ coping skills (H5a), parental mediation (H5b), and societal (school and government) interventions (H5c).

**Hypotheses 6 (H6).** Individuals’ causal attribution of adolescents’ risks has significant relationships with their evaluation of youths’ coping skills (H6a), parental mediation (H6b), and societal (school and government) interventions (H6c).

2.5. The Frame-Setting Effects of News Media

Media frames with commonly shared cultural roots help produce frame-setting effects on audiences. Framing effects tend to go unnoticed as a result of the shared nature and cultural familiarity [20]. Cultural roots can increase the applicability of media frames. Rooted in attribution theory and applicability effects, framing effects manifest better among audiences with a schema that matches a given framing, which agrees with people’s tendency to detect patterns consistent with pre-existing cognitive schemes [39].

Frame-setting studies discuss the impact of media frames on audiences [40]. Theories of framing effects are particularly used to examine the influence of news content at the individual level [39]. Iyengar [37] examines the influence of television news on viewers’ responsibility attributions in the case of political issues. His study suggests that if news articles emphasize the actions of private rather than government actors, the audience would demonstrate individualistic attributions of responsibility for national problems, such as poverty and terrorism, which weakens the accountability of elected officials. To examines the relationship between news coverage and the public perceptions of risk behaviors and responsibility attribution, this study proposes the following frame-setting hypotheses:

**Hypotheses 7 (H7).** Individuals’ news consumption levels have significant relationships with the public’s risk and opportunity perceptions (H7a), and with the public’s responsibility attribution to various stakeholders (H7b) regarding adolescents’ social media use.

3. Research Methods
3.1. Opinion Surveys

Using a random digit dialing technique, a computer-assisted telephonic survey of 825 Taiwanese adults aged 20–65 years was administered from 7–13 June 2017. The response rate is 31%. Of the total number of respondents, 51% are female. In addition, 48.8% are parents of a youth who is 9–17 years old living at home.

To measure the level of news consumption, respondents are asked to specify how many days per week they are exposed to news media, including newspapers, television, and online news. The results reveal that that average number of days is 5.6 (SD = 1.7). Pearson’s correlation coefficients ($r_s$) between the salience of frames (risk perception and responsibility attribution) and news consumption were calculated to indicate the frame-setting effects.
3.1.1. Perceived Risks and Opportunities

Since the same online activity can be defined as “a risk” or “an opportunity” by different people, this study does not predefine which online activities are risks or opportunities. Rather, based on their cognitive accessibility, respondents were asked to mention beneficial (or risky) activities that adolescents engage in when using social media. According to Balmas and Sheafer [41], the answer to this open question represents the most accessible issue attributes in a respondent’s memory depending on whether the respondent mentions a single activity. Once the participants provided their responses, the interviewers asked the question an additional two times and noted all mentioned activities. Later, the responses were coded using the same coding categories as the online activity list applied in the content analysis. Risk and opportunity perceptions were operationalized by the number of salient risk and opportunity behaviors mentioned by the respondents.

3.1.2. Responsibility Attribution

After the beneficial (or risky) activities were coded, they were asked “Who should be responsible for promoting (preventing) adolescents’ engaging in (out of) these beneficial (or risky) activities?” The respondents could state as many entities as they desired. Here, the salience of responsibility attribution frames for the four agencies in the respondents’ memory is indicated by whether the respondents mention any of them. Since the attribution of risks and opportunities to the same agency is highly correlated with each other, they are combined into a single item for each agency (youth, parents, and schools and the government) in the regression models in order to avoid collinearity.

3.1.3. Perceived Risk-Coping Strategies of Youth

Participants were asked to complete four statements, for example, “Commonly speaking, when facing online risks, the youth would . . . ” In doing so, the youths’ behavioral engagement in handling possible online risks was assessed. Drawing on the studies of Youn [42], four coping activities were employed to demonstrate adolescents’ risk-coping strategies, as follows: compare and critically evaluate whether the information is credible and relevant, install antivirus software and set up webpage safeties, use privacy strategies to enhance protection, and ask somebody (e.g., parents or teachers) for guidance on what they should do next (Cronbach’s $\alpha = 0.86$). These strategies are assessed on a 5-point Likert scale, where 1 denotes “strongly disagree”, and 5 denotes “strongly agree”.

3.1.4. Support for Parental Mediation

Referencing the existing literature, parental Internet mediation styles are categorized into restrictive mediation and instructive mediation. Restrictive mediation style is measured using the following two items: restricting time spent on Facebook and restricting content posted on Facebook. The four activities of parental instructive mediation include observing and leaving a comment on their children’s posts on Facebook, using Facebook together and discussing the content on the site, chatting about interesting things and events on Facebook, and helping to set up security settings on Facebook (Cronbach’s $\alpha = 0.81$). The respondents evaluate the effectiveness of the two strategies on a four-point scale (completely ineffective, seldom effective, sometimes effective, and usually effective).

3.1.5. Support for School and Government Interventions

Respondents were asked to evaluate the effectiveness of schools in designing regulations and that of the government in creating laws to restrict adolescents’ Facebook use. The two strategies are evaluated on a four-point scale (completely ineffective, seldom effective, sometimes effective, and usually effective). The results reveal that the two items are strongly correlated ($r = 0.63, p < 0.001$), and, thus, they are combined into one outcome variable, “support for societal intervention” (Cronbach’s $\alpha = 0.77$). Multiple regression analyses were only performed on data from the opinion survey to predict perceived risk-coping strategies of youth, support for parental mediation, and
support for school and government interventions. The following demographics were controlled in the regression models: respondents’ age (15.9% ≥ 30 years, 24.2% ≤ 40 years, 31.3% ≤ 50 years old, and 28.4% ≥ 51 years old), gender (51% are female), education (8.4% are primary- or middle-school graduates, while 31.9% are high-school graduates, and 59.8% are college graduates or above), area of residence (68.4% live in cities), occupation (77.9% are employed, excluding students), parental status (48.8% have a youth aged from 9–17 years and living with them), and frequency of Facebook use (never = 8.6%, seldom = 18.9%, sometimes = 23.2%, and often = 49.3%).

3.2. Content Analysis

The content analysis data are used to examine the salience of specific online activities and responsible agencies in news reports. This study conducted a content analysis of all relevant stories published in the top three newspapers in Taiwan (Apple Daily, Liberty Daily, and United Daily) from 1 August 2014 to 23 May 2017. These ranking data are obtained from the Reuters Institute’s Digital News Report 2017. The analysis uses news content published about three years prior to the date of the public opinion poll, which constitutes a period of substantive social media use by adolescents in Taiwan. Newspapers are selected as the research object because they often influence television news content. The digital archives of the newspapers’ full texts are obtained from the Taiwan News Smart Web and the udndata.com databases. They were searched for related content using keywords, such as “social media”, “Facebook”, “adolescences”, “middle school”, and “high school”. An article is included in the coding sample only when it involves at least one adolescent aged 9–17 years, and if it refers to how the adolescent(s) used social media. Articles not mentioning the age of the subject(s) were excluded. Human coders identified 320 articles directly and mainly related to adolescents’ use of social media.

Coding was carried out by two graduate students who received extensive training in coding categories. First, the coders were asked to identify the personal profiles of the adolescent users (e.g., age and gender) and their use contexts. Prior to coding the online activities, an exhaustive list of online activities that the youth may engage in was inductively created from research and opinion surveys on internet usage. Coders were asked to refer to the list to identify if any of the activities were present in the articles using a yes or no format. Activities mentioned several times in an article are counted as one mention.

After coding adolescents’ online activities, the coders were required to first identify the major problem and the effect or consequence of the activity mentioned in the article, and then to examine whether one or more of the four potential stakeholders (adolescent users, their parents, schools, and the government) were discussed in the media as causes or solutions. If multiple agencies were mentioned, only the most salient one was coded.

Inter-coder reliability is calculated by double-coding a random sample of 52 out of the 320 articles. To assess the reliability of each variable, the mean scores of Krippendorff’s alpha were estimated using an online calculator (dfreelon.org) (Accessed on 1 January 2020). Krippendorff’s alpha was 0.75 for online activities and 0.79 for responsibility attribution. The results are deemed acceptable.

4. Results

4.1. Descriptive Results for Public Perceptions and Media Content

To explore RQ1 and RQ2, Table 1 tallies the percentages of respondents who mentioned the top 10 online risks and opportunities in the public opinion survey with the number of stories covering them in the news reports. Because the survey data and content data have different units of analysis, those percentages were only compared based on the face values, without indicators for statistical significance.
Table 1. Adolescents’ online risks and opportunity activities mentioned by survey respondents and their corresponding salience in news coverage.

<table>
<thead>
<tr>
<th>Top 10 Online Opportunities</th>
<th>Survey</th>
<th>News</th>
<th>Top 10 Online Risks</th>
<th>Survey</th>
<th>News</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Learning new things (e.g., a language)</td>
<td>390 (47.3%)</td>
<td>24 (7.5%)</td>
<td>Becoming victims of cheating/fraud</td>
<td>494 (59.9%)</td>
<td>14 (4.4%)</td>
</tr>
<tr>
<td>2. Doing work for school</td>
<td>335 (40.6%)</td>
<td>17 (5.3%)</td>
<td>Contacting or meeting a stranger on the Internet</td>
<td>355 (43%)</td>
<td>32 (10.0%)</td>
</tr>
<tr>
<td>3. Sharing self-made content</td>
<td>275 (33.5%)</td>
<td>55 (17.2%)</td>
<td>Giving out personal information</td>
<td>313 (37.9%)</td>
<td>32 (10.0%)</td>
</tr>
<tr>
<td>4. Reading others’ homepages/blogs</td>
<td>233 (28.2%)</td>
<td>33 (10.3%)</td>
<td>Accidentally visiting a pornographic site</td>
<td>302 (36.6%)</td>
<td>4 (1.3%)</td>
</tr>
<tr>
<td>5. Playing games</td>
<td>192 (23.3%)</td>
<td>14 (4.4%)</td>
<td>Playing violent games</td>
<td>213 (25.8%)</td>
<td>2 (0.6%)</td>
</tr>
<tr>
<td>6. Downloading or watching movies</td>
<td>171 (20.7%)</td>
<td>14 (4.4%)</td>
<td>Using material without authors’ consent</td>
<td>206 (25%)</td>
<td>8 (2.5%)</td>
</tr>
<tr>
<td>7. Reading the news</td>
<td>169 (20.5%)</td>
<td>9 (2.8%)</td>
<td>Verbally attacking an unknown person</td>
<td>180 (21.8%)</td>
<td>14 (4.4%)</td>
</tr>
<tr>
<td>8. Shopping</td>
<td>154 (18.7%)</td>
<td>9 (2.8%)</td>
<td>Been sent porn from someone met online</td>
<td>174 (21.1%)</td>
<td>26 (8.2%)</td>
</tr>
<tr>
<td>9. Looking for cinema, theater, concert listings</td>
<td>147 (17.8%)</td>
<td>14 (4.4%)</td>
<td>Downloading illegal movies</td>
<td>128 (15.5%)</td>
<td>9 (2.8%)</td>
</tr>
<tr>
<td>10. Obtaining online content to edit</td>
<td>130 (15.8%)</td>
<td>14 (4.4%)</td>
<td>Buying and selling illegal products</td>
<td>119 (14.4%)</td>
<td>3 (0.9%)</td>
</tr>
</tbody>
</table>

In the public opinion survey, the most frequently mentioned opportunities are learning new things (47.3%), doing work for school (40.6%), and sharing self-made content (33.5%). By contrast, the most frequently cited opportunities in news reports are posting pictures or stories (33.1%), sharing self-made content (17.2%), and online chatting (11.3%).

The most frequently cited risks in the public opinion survey are becoming victims of cheating/fraud (59.5%), contacting or meeting a stranger on the Internet (43%), and giving out personal information to others (37.9%). The most frequently cited risks in news reports are contacting strangers met online (10.0%), giving out personal information to others (10.0%), and receiving pornographic content (8.2%).

Among the social media activities reported by the survey respondents, the average number of opportunities explored by an adolescent is 3.57 (SD = 1.62), and the average number of risks is 3.53 (SD = 1.66). The average number of risks is less than that of opportunities. Since H1 predicts the opposite, it is not supported. On the other hand, newspapers reported a significantly higher number of online opportunities (mean = 2.1, SD = 1.74) than risks (mean = 0.62, SD = 1.31). In a similar manner, H2 is not confirmed.

RQ3 addresses the public’s understanding of who is responsible for the risks and opportunities that adolescents face on social media. In Table 2, the percentage of respondents who assign risk and opportunity responsibility to the four entities is compared with the number of articles attributing responsibility to them. The “survey” column shows that the respondents most frequently cited adolescent users (87.9%) as agencies for promoting online opportunities and avoiding online risks. In contrast, their parents (58.4%), schools and teachers (27.1%), and the government (5.1%) are mentioned less as causes and solutions for both online opportunities and risks. Since the total attribution to adults (90.6%) is larger than that of adolescents, H3 is supported.

To address RQ4, the coders identified the major responsible agencies of online risks and opportunities in 261 out of 320 news articles (81.6%). The most frequently mentioned agency in 110 news articles is adolescent users (42.1% of 261), followed by parents (n = 81, 31%), schools and teachers (n = 40, 15.3%), and the government (n = 25, 9.6%). Since the sum of attribution to adults is larger than that of adolescents, H4 is also supported.
Table 2. Comparison of percentage of agencies viewed responsible for youths’ risks and opportunities on social media.

<table>
<thead>
<tr>
<th>Attribution Entities</th>
<th>Responsibility Attribution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>News (n = 261 a)</td>
</tr>
<tr>
<td>Adolescents</td>
<td>110 (42.1%)</td>
</tr>
<tr>
<td>Peer and online friends</td>
<td>5 (1.9%)</td>
</tr>
<tr>
<td>Adults</td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td>81 (31%)</td>
</tr>
<tr>
<td>Schools and teachers</td>
<td>40 (15.3%)</td>
</tr>
<tr>
<td>Government</td>
<td>25 (9.6%)</td>
</tr>
<tr>
<td>Subtotal</td>
<td>146 (55.9%)</td>
</tr>
<tr>
<td>Total</td>
<td>261 (100%)</td>
</tr>
</tbody>
</table>

Notes: a The coders identified major agencies responsible for online risks and opportunities on the basis of 261 articles (81.6%) from the total coding sample (n = 320); b The survey respondents were allowed to name multiple agencies responsible for online risks and opportunities.

Descriptive statistics for key variables in the opinion survey are shown in Table 3. On a five-point Likert scale, respondents generally don’t agree that adolescents are effectively able to handle possible online risks (M = 2.91 vs. 3, SD = 0.85, t = −2.9, p < 0.001). However, they agreed most strongly that, when facing online risks, young people would attempt to improve the safety settings of websites (M = 3.08, SD = 0.99) and ask somebody for guidance (M = 2.97, SD = 1.02). Nevertheless, they did not agree that adolescents would compare and critically evaluate message credibility (M = 2.80, SD = 1.03), nor that they would use privacy strategies to enhance protection (M = 2.81, SD = 1.02).

Table 3. Descriptive statistics and internal consistency of key variables in the opinion survey.

<table>
<thead>
<tr>
<th>Variables</th>
<th>No. of Items</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
<th>Cronbach’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social media use (frequency)</td>
<td>1</td>
<td>3.13</td>
<td>1.01</td>
<td>1–4</td>
<td>NA</td>
</tr>
<tr>
<td>News consumption level (days per week)</td>
<td>1</td>
<td>5.64</td>
<td>1.73</td>
<td>0–7</td>
<td>NA</td>
</tr>
<tr>
<td>Risk perception (no. of activities mentioned)</td>
<td>1</td>
<td>3.53</td>
<td>1.66</td>
<td>0–10</td>
<td>NA</td>
</tr>
<tr>
<td>Opportunity perception (no. of activities mentioned)</td>
<td>1</td>
<td>3.57</td>
<td>1.62</td>
<td>0–10</td>
<td>NA</td>
</tr>
<tr>
<td>Youths’ coping skills</td>
<td>4</td>
<td>2.91</td>
<td>0.85</td>
<td>1–5</td>
<td>0.86</td>
</tr>
<tr>
<td>Parental mediation</td>
<td>5</td>
<td>2.32</td>
<td>0.80</td>
<td>1–4</td>
<td>0.81</td>
</tr>
<tr>
<td>School &amp; government regulations</td>
<td>2</td>
<td>2.10</td>
<td>0.74</td>
<td>1–4</td>
<td>0.77</td>
</tr>
</tbody>
</table>

Note. SD = standard deviation. n = 825.

With 3 equals to sometimes effective, neither parental mediation (M = 2.32, SD = 0.80, t = −34.7, p < 0.001) nor public intervention (M = 2.10, SD = 0.74, t = −24.4, p < 0.001) were perceived as being sometimes effective in mitigating the risks adolescents face on social media. Among the five activities of parental mediation, chatting about interesting things and events on social media (M = 2.54, SD = 0.88) and using together and discussing the content (M = 2.39, SD = 0.88) were considered most effective, while restricting time and content (M = 2.10, SD = 0.85) and observing and leaving comments (M = 2.22, SD = 0.85) were perceived to be least effective. Comparatively speaking, of all the risk solutions, school regulation is considered most ineffective (M = 2.07, SD = 0.81) and government law is about the same (M = 2.13, SD = 0.84).

4.2. Frame Setting Effects

News consumption level has a significant negative relationship with the number of perceived opportunity activities (r = −0.12, p < 0.01), but not with that of perceived risk activities (r = −0.012, p = 0.73). Individuals who consume more news perceive significantly fewer online opportunities associated with adolescents’ social media use. The results partially support H7a.
Contrary to H7b, no responsibility frame was found to correlate with news consumption. The correlations between news consumption and responsibility attribution to the youth, parents, school, and government are, respectively, \( r = 0.06, p = 0.11 \); \( r = -0.07, p = 0.06 \); \( r = 0.03, p = 0.37 \); and \( r = 0.03, p = 0.34 \). Thus, H7b is not supported.

Multiple regressions were performed to predict public support for the following three major solution areas: adolescents’ copying skills, parental mediation, and school regulations and government interventions (see Table 4). Individuals’ understanding of risk perception and responsibility attribution, in addition to their media use behaviors, are the main independent variables, and the study controls for the demographic variables.

Table 4. Multiple regression analyses predicting the public’s evaluation of adolescents’ coping skills, parental mediation, and school and government interventions (standardized coefficients).

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Youths’ Coping Skills</th>
<th>Parental Mediation</th>
<th>School &amp; Government Regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.02</td>
<td>0.03</td>
<td>0.09 *</td>
</tr>
<tr>
<td>Education</td>
<td>-0.00</td>
<td>0.05</td>
<td>0.04</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>-0.01</td>
<td>0.01</td>
<td>-0.05</td>
</tr>
<tr>
<td>Region (city)</td>
<td>-0.15 ***</td>
<td>-0.05</td>
<td>-0.08 *</td>
</tr>
<tr>
<td>Occupation (employed)</td>
<td>-0.10 **</td>
<td>-0.06</td>
<td>-0.03</td>
</tr>
<tr>
<td>Parental status (parents)</td>
<td>0.16 ***</td>
<td>0.04</td>
<td>0.00</td>
</tr>
<tr>
<td>Media use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social media use (frequency)</td>
<td>0.09 *</td>
<td>0.03</td>
<td>-0.11 **</td>
</tr>
<tr>
<td>News consumption level</td>
<td>-0.02</td>
<td>-0.01</td>
<td>-0.03</td>
</tr>
<tr>
<td>Risk Perception &amp; Responsibility Attribution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk perception</td>
<td>-0.05</td>
<td>-0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Opportunity perception</td>
<td>0.05</td>
<td>-0.02</td>
<td>-0.05</td>
</tr>
<tr>
<td>Youths’ responsibility</td>
<td>0.03</td>
<td>-0.02</td>
<td>0.04</td>
</tr>
<tr>
<td>Parents’ responsibility</td>
<td>-0.25 ***</td>
<td>-0.08 *</td>
<td>-0.14 ***</td>
</tr>
<tr>
<td>School’s responsibility</td>
<td>0.00</td>
<td>-0.10 *</td>
<td>-0.01</td>
</tr>
<tr>
<td>Total adjusted ( R^2(%) )</td>
<td>11.5</td>
<td>2</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Note: \( n = 825. * p < 0.05, ** p < 0.01, *** p < 0.001 \).

The results in Table 4 suggest that use of traditional news media is not a significant predictor of the public’s perception of youths’ coping skills (\( \beta = -0.02, p = 0.64 \)), parental mediation (\( \beta = -0.01, p = 0.80 \)), and societal regulations (\( \beta = -0.03, p = 0.39 \)). However, the impact of social media use remains a significant predictor of the public evaluation of youths’ coping skills (\( \beta = 0.09, p < 0.05 \)) and societal intervention (\( \beta = -0.11, p < 0.01 \)). Frequent social media users perceive a higher level of youths’ risk-coping skills, and perceive that school and government regulation is less effective.

Furthermore, H5 and H6 predict that citizens will use their risk perception and responsibility attributions to evaluate risk solutions. As shown in Table 4, public perceptions of both risk and opportunity activities are not significant predictors of the public’s perceptions of adolescents’ coping skills, parental mediation, or school and government intervention. Therefore, these findings do not support H5.

In terms of the impact of responsibility attribution, across all of the regression models in Table 4, attribution to parents’ responsibility is an important predictor. In particular, individuals who attribute greater responsibilities to parents tend to give poorer evaluations of the youths’ coping skills (\( \beta = -0.25, p < 0.001 \)), parental mediation (\( \beta = -0.08, p < 0.05 \)), and school and government regulations (\( \beta = -0.14, p < 0.001 \)). The attribution of responsibility to adolescent users, on the other hand, has no influence on these evaluations.

Societal attribution to schools does not affect the public’s perception of the youths’ coping skills (\( \beta = -0.00, p = 0.95 \)), and of school and government interventions (\( \beta = -0.01, p = 0.77 \)). Instead, it is a significant predictor of the public’s perception of parental mediation.
People who attribute more responsibility to schools perceive parental mediation to be less effective. Overall, these findings only partially support H6.

In addition, older adults tend to have a more positive viewpoint of school and government interventions ($\beta = 0.09, p < 0.05$). Gender and education are not significant predictors. Respondents who live in metropolitan areas have a stronger negative attitude toward the youths’ coping skills ($\beta = -0.15, p < 0.001$) and public interventions ($\beta = -0.08, p < 0.05$). Unemployed respondents tend to perceive a higher level of youths’ coping skills ($\beta = -0.10, p < 0.01$). Interestingly, compared with non-parents, parents of adolescents have more positive views about the youths’ coping skills ($\beta = 0.16, p < 0.001$).

The three regression models account for a significant proportion of the variance in the evaluation of the youths’ coping skills (adjusted $R^2 = 11.5\%, p < 0.001$), parental mediation (adjusted $R^2 = 2\%, p < 0.001$), and school and government interventions (adjusted $R^2 = 4.2\%, p < 0.001$). Among the three models, parental mediation has the poorest model fit, with only 2% of its variance explained by the predictors. In comparison, the model to predict public evaluation of youths’ risk-coping strategies exhibits the best model fit.

5. Discussion

Until June 2017, Taiwanese newspapers did not consider adolescents’ use of social media and its effects to be a critical issue, and this is evident from the few related articles on the subject. Adolescents’ use of social media has limited news value because it is a long-term, gradual trend without dramatic changes, despite its wide adoption and profound impact. According to agenda-setting theory, the low frequency of media reports will lead to the public underestimating the adoption rate, use intensity, and significance of the impact on adolescents and their families. The low level of news coverage might be the main reason why frame-setting effects were not confirmed in this study.

According to this study’s results, mass media tends to report more online opportunities than online risks. In other words, mass media is defining adolescents’ Internet use as a positive issue. Further, no media panic was found in the dominant discourse in Taiwanese mainstream media, a finding consistent with previous studies on the media framing of children’s ICT use [11,12]. Critical studies state that ICT companies and the government use positive media discourses to legitimize their gain from the societal adoption of ICT [11,26].

In addition, no “moral panic” was found among the public. On average, respondents report an equal number of opportunities as risks and agree that youth engage in coping strategies when faced with online risks. The most salient online opportunities are learning new things, doing work for school, and sharing self-made content. The most salient online risks are cheating, contacting strangers met online, and sharing personal information.

When discussing responsibilities related to youths’ online risks and opportunities, both the public and the news media mentioned adolescent users as the major agency in promoting online opportunities and avoiding online risks. This indicates that adolescents have been expected to take most of the responsibility to choose and control events on social media. They are seen as active and independent participants in their social media experience. This expectation may result from the decentralized and mobile characteristics of new technology.

Comparatively speaking, newspapers and the public significantly focus on individual-level (parents and adolescent users) rather than social-level (schools and the government) responsibilities. Parents have been assigned significant responsibility for online risks, despite their limited knowledge about and access to their adolescent children’s real social media use. This result is consistent with the literature that parental efforts to regulate adolescents’ online behaviors have been constructed as vital and necessary to their own interests [8] and to the future of the nation [43]. This discourse may deflect public attention from larger societal factors. Kim and Telleen [35] view this attribution to individual-level factors as a victim-blaming frame. Newspapers’ emphasis on the authentic voice of adolescents may unintentionally create the impression that adolescent users are the most responsible for online risks.
However, the public was not confident in adolescents’ risk-coping behaviors. While they were neutral with the statement that adolescents would install antivirus software, set up webpage safeties and seek advice, they did not agree that adolescents would critically evaluate message credibility and protect their privacy. Additionally, the respondents were not confident in the effectiveness of parental mediation and public intervention. Comparatively speaking, they perceived that parental mediation is more effective than school and government regulations. These findings suggest that the public would not support school and government interventions in adolescents’ use of social media.

Regarding media effects on the public evaluation of the four treatments, this study offers three major findings. First, individuals who consume more news did not perceive significantly more risks associated with adolescents’ social media use. However, individuals who consume more news perceive significantly fewer online opportunities. This finding suggests that news coverage engenders a limited impact on the public’s risk perception of the issue, but it may decrease the unrealistic optimism about ICT.

At the same time, there is no significant impact of news consumption on the public’s responsibility attribution. The public’s perception of responsibility is not directly cultivated by the news coverage of adolescents’ social media use. Instead, both responsibility frames in media coverage and public opinion may be determined by cultural roots as a possible non-media factor. This study’s findings also indicate that the perceptions of both risky and opportunity-taking behaviors exert no power on public evaluations. The public neither regards online risks nor online opportunities as applicable to these evaluations.

Additionally, the results of the multiple regression analysis indicated that news consumption level did not influence the public’s evaluation of the youths’ coping skills, parental mediation, and school and government regulations. These results suggest that the consumption of news coverage has not framed the public understanding of the risks adolescents face on social media, as well as its causes and solutions. Instead, they are more influenced by the negative impression of adolescents’ coping activities and parental mediation. The public may form this impression from their own uses and experiences on social media.

Overall, the frame-setting models in this study do not effectively account for the variance in the public evaluation of youths’ coping skills and school and government interventions. Instead, they better explain variances in the evaluation of parental mediation. At the same time, of all the predictors, attributing responsibilities to parents is the most important predictor of the public’s evaluation of related solutions. In particular, individuals who attribute greater responsibilities to parents tend to hold stronger negative views of youths’ coping skills, parental mediation, and social-level treatment (school and government regulations).

This difference may be attributed to the fact that, when facing a novel issue, audiences turn to mental shortcuts, given their lack of linkages between this issue and countervailing considerations [39,44]. In comparison, the evaluation of parental mediation may have stronger links with existing cultural values than that of the youths’ risks and coping skills on social media. Again, the media discourse on parental responsibility regarding risks may result in the public placing unrealistic expectations on parents and overlooking the school and governments’ responsibility toward online risks.

On the other hand, attributing responsibility to adolescent users and society does not affect the public’s perception of youths’ risks and coping skills, parental mediation, and school and government interventions. Although adolescent users are most often mentioned as the responsible agency for their social media use in both news coverage and public opinion surveys, the public does not assign any weight to this consideration when evaluating the different types of solutions to social media issues. Additionally, the public framing of the school’s responsibility yielded a negative impact on the public evaluation of parents’ mediation. The public regards school and parents as alternative agencies to resolve problems facing adolescents on social media.
Using both content analysis data and public opinion data to measure problem definitions and responsibility attributions, this study represents a comprehensive examination of the media’s role in defining the public’s understanding of adolescents’ risks on social media. The inference of whether media usage affects attitudes can be improved by combining content data and survey data [45]. While content analyses could reveal information on content patterns, survey data can claim that there are media effects based on the positive correlation found between media exposure and attitudes [45].

This study at least has three limitations. The first limitation of this study is that its survey data was collected in 2017, which is about five years ago. However, the inferential results about relationships among concepts are not time-sensitive as descriptive results [46]. Secondly, the response rate of the opinion survey is 31%. Nevertheless, 50% or higher is considered excellent in most circumstances. In recent years, survey response rates in the 5% to 30% range are far more typical, according to the website of Customer Thermometer [47]. Lastly, and probably most importantly, the measure of media exposure in the survey is not sophisticated enough to make causal inferences beyond a correlative linkage. In addition, survey respondents’ news consumption (including newspapers, television, and online news) and opinions about adolescent social media use were assessed rather broadly, while, in the content analysis, only articles from newspapers were included, and only Facebook was included as one of the keywords for article selects (a bit specific compared with the broad term social media was assessed as in the opinion survey). These differences may influence the findings. According to De Vreese et al. [45], future studies pursuing more robust inference should use panel survey data to weight an individual’s exposure to each specific media outlet. In addition, this study contributes to the understanding of the role of cultural resonance in the youths’ nature and agency.

6. Conclusions

Neither the news media nor the general public has regarded adolescents’ heavy use of social media as an important public issue. As for now, school and government interventions have not been favorably evaluated by the wider public. As adolescents’ use of social media is defined as a private issue, parents are regarded as the actors most responsible for adolescents’ online behaviors. At this stage, parents cannot rely on schools or the government to enforce school rules or government regulations to restrict the industry. Parental instructive mediation and adolescents’ internet literacy skills and knowledge were considered more effective.

In addition to individual-level factors, the news media should provide more critical and in-depth analysis of the impact of larger societal factors. Some critical scholars [48] have introduced the term “platform capitalism” to describe how the social media industry exploits the services of its users by encouraging a hegemonic discourse of creativity, participation, connection, and self-realization. Adolescents are encouraged to adopt online sharing activities from a very early age with a gradual internalization of the discourse, which actually helps platform capitalism to maintain its power.

The media should report more risks that are less dramatic, but more frequently encountered by adolescents, such as receiving pornography and violent content. Sexual-oriented content has made adolescents more permissive towards sexuality, initiated earlier sexual intercourse, and more negative attitudes toward women [49]. Violent media content has developed fear, distrust, and vulnerability among children, and aroused them to behave violently, as well as to become desensitized to the pain and suffering of fellow humans [50].

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