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Internet-specific parental self-efficacy: Developmental differences and links to Internet-specific mediation

Abstract

Most children spend significant time on the Internet every day, and parents have an important role in helping their children to avoid negative online experiences. In this study, we examine the potential role of Internet-specific parental self-efficacy (Internet-specific PSE) as an antecedent for Internet-specific parenting practices. A study of 1025 parents of children in grades 6 (approximately 11-12 years) to 12 (approximately 17-18 years) allowed us to examine the links among Internet-specific PSE, the child's grade in school, and Internet-specific parenting practices. The results showed developmental decreases in Internet-specific PSE and Internet-specific parenting practices: Parents of older adolescents felt less efficacious and used less control-based parenting practices than did parents of younger adolescents. Furthermore, Internet-specific PSE was a significant predictor of Internet-specific parenting practices (both communication-based and control-based practices). These results suggest the importance of both parental beliefs and children's grade in school for parenting in the area of children's online activities.

Key words: Internet-specific parenting; Parental self-efficacy; Adolescence; Parental mediation

Internet-specific parental self-efficacy: Developmental differences and links to Internet-specific mediation

1. Introduction

Most children and adolescents spend significant time on the Internet every day. Although the Internet offers unique opportunities for knowledge acquisition and social interactions, many children experience inappropriate or upsetting material online (Sorbring & Lundin, 2012), and parents often report being worried about online risks (Sorbring, 2014; Symons, Ponnet, Walrave, & Heirman, 2017). Negative online experiences include, but are not limited to, exposure to material with pornographic or violent content, and subjection to online threats and bullying (Sorbring & Lundin, 2012). Of additional concern for parents is the risk of problematic online behaviors and risk-taking initiated by one's child, including posting personal information online and befriending strangers (Sasson & Mesch, 2014). Because parents have a central role in teaching their children and adolescents about online behaviors (Steeves, 2014), it is important to understand what motivates parenting practices that aim to reduce children's negative online experiences.

In this study, we apply a psychological theory to examine the relationship between parents' cognitions and parenting practices that aim to reduce or prevent children's negative online experiences. Based on the concept of parental self-efficacy (PSE)—parents' beliefs in their abilities to influence their child in ways that would foster the child's development (Bandura, 1997; Coleman & Karraker, 1998; Jones & Prinz, 2005)—we focus on PSE regarding children's Internet use (i.e., Internet-specific PSE). We define Internet-specific PSE as the extent to which parents believe they can influence children's Internet-related behaviors and prevent them from having negative online experiences. Since previous research demonstrates that high levels of general PSE have a positive impact on effective parenting practices (e.g., Glatz & Buchanan, 2015a; Slagt, Deković, de Haan, van den Akker,

& Prinzie, 2012), parents' perceptions of their influence specifically on children's Internet use are likely to be important in explaining differences in parenting practices related to children's online behaviors. As of yet, no study has examined predictors and consequences of Internet-specific PSE; knowledge that would provide important implications for theory on parenting processes in general, as well as parenting of children's Internet use in particular.

1.1. Parental Mediation in Different Domains

Parental mediation refers to parenting practices intended to supervise and guide children's media use, in order to minimize the negative impacts and maximize the benefits of media on children (e.g., Nathanson, 1999; Warren, 2001). Studies on parental mediation have traditionally focused on television viewing and video gaming, and have presented three distinct categories of these parental practices (e.g., Nathanson, 1999; Nikken & Jansz, 2006; Valkenburg, Krcmar, Peeters, & Marseille, 1999). First, restrictive mediation involves setting rules about children's media use, such as deciding what television programs children are allowed to watch. Second, active mediation concerns communication about media use with children, such as talking to children about negative material that they might experience. Third, co-viewing refers to parental presence during children's media use (e.g., watching television together), without necessarily engaging in discussions with the child about the content.

As a more recent area of parental mediation, Internet-specific mediation can be described as practices that parents use to manage what their children are doing online. Similar to parental mediation of children's other media use, categories of Internet-specific mediation practices have been proposed (e.g., Livingstone and Helsper, 2008; Sonck, Nikken & de Haan, 2013; Vaterlaus, Beckert, Tulane, & Bird, 2014). For example, Sonck and colleagues (Sonck et al., 2013) provided empirical support (using factor analysis) for four categories of parental Internet-specific mediation. A first category was restrictive content

mediation and referred to setting and enforcing rules about online activities. Second, active mediation was described as having discussions with the child about the risks of the Internet, and strategies for safe usage. Monitoring, a third category referred to checking children's online activities, such as their social media profiles. The fourth category was restrictive technical mediation and referred to applications to control or filter websites (e.g., using monitoring software).

The categories within the domain of parental mediation of television viewing and video gaming share several similarities with the categories within the Internet domain, such as talking with the child about controversial or negative material and setting up rules about activities. This suggests that parents apply practices of more established media domains, such as television viewing, to the Internet domain (Warren, 2017; Warren & Bluma, 2002). However, although these categorizations share several similarities, they also have unique elements. In addition to a general restrictive category, the Internet-specific mediation strategies presented by Sonck and colleagues (2013) also describe parenting practices uniquely adapted to the Internet context. In the Internet domain, parents used specific restrictive and monitoring mediation techniques that would result in more information about the child's online activities (checking online history) and further restricting the child's access to certain information online (monitoring software). Additionally, Sonck and colleagues did not find evidence for a "co-viewing" category in the Internet-specific context. This makes logical sense, since Internet use is often an independent activity, in contrast to television viewing and video game playing, both of which provide an opportunity for parents and children to engage in the media together (Livingstone & Helsper, 2008; Valkenburg, Piotrowski, Hermanns, & de Leeuw, 2013). Hence, while restriction and active mediation apply across a variety of media contexts (including the Internet), certain monitoring practices seem to be specific to the Internet domain.

1.2. Internet-Specific PSE

Grounded in research showing that parental mediation—and especially discussion about the Internet with the child (i.e., active mediation)—is associated with positive online behaviors and reduced problematic behavior and risk-taking (e.g., Liu, Fang, Deng, Zhang, 2012; Shin & Ismail, 2014; Shin & Kang, 2016), it is of interest to examine what motivates effective parenting practices in this domain. One factor that might be important to Internet-specific mediation is parents' perceptions about their influence on children's Internet-related behaviors. According to Bandura (Bandura, 1977, 1997), parents who believe they can positively influence their children—in other words, those who have higher levels of parenting self-efficacy (PSE)—are more likely to use effective parenting practices, which in turn should have a positive impact on children's adjustment. Specifically, higher PSE is predicted to increase parents' commitment to and interest in parenting (Jones & Prinz, 2005), and should motivate parents to expend the effort on practices that are more effective. In support of Bandura's theory, data show that higher PSE is indeed linked to higher positive parenting practices such as warmth and support, and lower negative parenting practices such as inconsistent or harsh discipline (e.g., Glatz & Buchanan, 2015a; Slagt et al., 2012). Hence, empirical evidence suggests that PSE is positively associated with effective parenting practices in general.

Whereas general PSE concerns parents' perceptions about their abilities to influence their children in general, task-specific PSE is defined as the level of perceived influence that parents have about specific areas of parenting (e.g., discipline, helping with homework) (Coleman & Karraker, 1998, 2000; Jones & Prinz, 2005). The current study represents a first attempt to conceptualize parents' perceptions of influence within the task-specific domain of children's Internet use, which we define as parents' beliefs that they can influence children's Internet-related behaviors and prevent them from having negative online experiences.

Managing children's online activities presents challenges for parents, in part because children's Internet use can easily take place in a context that is not constantly monitored (e.g., the child's bedroom, in school, on a smartphone) (Livingstone, Haddon, Görzig & Ólafsson, 2011; Symons et al., 2017). For this reason, it might be difficult for parents to know or effectively control what their children are doing online, and thus, create doubts about parents' own abilities to influence children's behaviors in this domain. Additionally, information provided to parents through media or other sources often focuses on the negative experiences that children can have online - a fact that can heighten parents' worries and perhaps contribute to doubts about their ability to have a positive influence. Parents are likely to have different levels of efficacy in dealing with these challenges, which should have consequences for their parenting.

Despite the importance of PSE for parenting practices in other parenting domains (e.g., Glatz & Buchanan, 2015a; Jones & Prinz, 2005; Slagt et al., 2012), research on PSE and its links to parenting practices within the Internet domain is just emerging. Two qualitative studies (Shin, 2015; Symons et al., 2017), examining parents' perceptions of the role of various socializing agents in creating a safe Internet environment for children offer some relevant knowledge. First, Shin (2015), who performed in-depth interviews with 20 Singaporean parents of children aged seven to 12, reported that most parents felt confident about managing their children's Internet use and that most viewed parents as having an important role in creating a safe Internet environment for children. Nonetheless, these parents also acknowledged difficulties in monitoring and controlling children's Internet activities, and expressed worries that their influence would be reduced over time. Second, Symons and colleagues (2017), reported on focus groups with parents of adolescents aged 13 to 17. In that study, parents described themselves as having a minimal role in parenting of their children's Internet use. Rather, they ascribed themselves as guarding from the sideline

and being available when their adolescents needed them. Parents also discussed the difficulty in balancing supervision of adolescents' Internet use and granting of developmentally-appropriate autonomy. These studies provide a first and exploratory examination of parents' Internet-specific PSE, but they are limited by small sample sizes that did not allow tests of predictors or outcomes of Internet-specific PSE. In addition to these two qualitative studies, in a recent study by Shin (2017), the link between general PSE and active Internet-specific mediation was quantitatively examined and empirically supported among parents of children between 10 and 17 years of age. This finding supports the idea that PSE is positively associated with parental mediation, but gives little insight into Internet-specific PSE (rather than general PSE), and its link to different parental mediation strategies (i.e., mediation practices other than active mediation). Hence, these three studies take the first step in examining Internet-specific PSE, but there is still much to learn about parents' beliefs concerning their ability to manage children's Internet use.

1.3. Developmental Differences in Internet-Specific PSE and Mediation

Children and the parent-child relationship undergo developmental changes that are relevant to parenting (Steinberg, 2008), suggesting that parents might have different perceptions about their influence and might use different strategies to manage their children's Internet use depending on the child's age. Few empirical examinations exist concerning differences as a function of the child's age. However, parents' statements in the studies by Shin (2015) and by Symons and colleagues (2017) appear to be in line with the predicted decline in Internet-specific PSE. Parents in the first study, who had children aged seven to 12 years, expressed high confidence in their role. In contrast, parents in the second study, who had adolescents between 13 and 17 years, ascribed themselves a minimal role in terms of parenting their children's Internet use. Additionally, some of the parents in Shin's (2015) study expressed worries about whether their mediation practices would be as effective as their

children grew older. These results suggest that Internet-specific PSE might differ based on children's ages, and are consistent with other research on PSE more generally, since parents of pre- and young adolescents report more general PSE than do parents of older adolescents (Ballenski & Cook, 1982; Glatz & Buchanan, 2015b). Reductions in Internet-specific PSE as children move from childhood through adolescence might result from increases in perceived need and bids for autonomy (e.g., Wray-Lake, Crouter, & McHale, 2010), particularly in Western contexts. Adolescents, in comparison to younger children, likely view Internet use as an aspect of the personal domain (e.g., Smetana, 1995), and thus, not appropriate for parental authority (Symons et al., 2017). Parental interventions in this domain might, therefore, be viewed as increasingly intrusive over the course of adolescence (Smetana, 1995; Soenens, Vansteenkiste & Niemiec, 2009; Valkenburg et al., 2013). Changes in children's and adolescents' need and bids for autonomy, especially in a personal domain, might lead to associated changes in PSE: Parents might believe that they should not or cannot influence this specific area of their children's life the older the child gets.

In studies examining age differences in Internet-specific mediation, parents of children between nine and 17 years have been examined. The results suggest that parents of adolescents use less mediation in general, and less restrictive mediation, in particular, than do parents of pre-adolescents (e.g., Livingstone & Helsper, 2008; Lee, 2012; Padilla-Walker, Coyne, Fraser, Dyer & Yorgason, 2012; Sonck et al., 2013). Hence, parents of adolescents seem to reduce their use of practices that might be seen by adolescent children as intruding on their privacy (e.g., restrictive mediation), perhaps to offer the adolescent more autonomy than a younger child. Active mediation, however, seems to be used consistently across the preadolescent and adolescent years (Sonck et al., 2013; Shin & Lwin, 2017).

1.4. The Present Study

The primary aim of this study was to examine Internet-specific PSE and its link to Internet-specific parenting (i.e., “mediation”) practices among parents of adolescents. Grounded in Bandura’s theory on PSE (e.g., Bandura, 1977, 1997), our first hypothesis was that Internet-specific PSE would be positively related to parents’ Internet-specific mediation. Parents’ general PSE appears to be correlated with their active Internet-specific mediation (Shin, 2017), but the link between Internet-specific PSE and Internet-specific mediation practices is currently untested, to our knowledge. Because Internet-specific PSE constitutes a new and somewhat unstudied area, measures of Internet-specific PSE are not well developed. Therefore, we introduce and validate a quantitative measure based on established PSE measures and suggestions by Bandura (2006) on how to construct PSE-scales.

We also tested for developmental differences in Internet-specific PSE and Internet-specific mediation across the adolescent years. The few studies that have begun to examine PSE in the Internet domain (Shin, 2015, 2017; Symons et al., 2017) suggest that parents’ perceptions of their influence on children’s Internet use declines with increases in the child’s age (from childhood into adolescence). However, because these studies were based on small samples that did not overlap age-wise, the association between children’s age and Internet-specific PSE needs to be tested in a larger sample of parents of children in different age groups. Based on earlier research, our second hypothesis constituted that parents of young adolescents would feel more efficacious about influencing their children’s Internet use, and they would use more restrictive mediation, than parents of older adolescents.

We examined the two hypotheses in a large and diverse (in terms of ethnicity and children’s age) sample of parents of children in sixth (i.e., 11-12 years) through 12th grade (i.e., 17-18 years). These represent the first examinations, to our knowledge, of predictors and outcomes of Internet-specific PSE in a large sample of parents of children in a wide age range.

2. Methods

2.1. Procedures

Data for this study were derived from a larger project on parenting and parental self-efficacy among parents of pre-adolescents and adolescents collected in 2014. Sampling of the data was weighted based on parents' ethnicity to approximate the US population, and included parents of children in sixth grade (approximately 11-12 years) to 12th grade (approximately 17-18 years). Through a research company, Qualtrics Panel, we were able to recruit a US nation-wide sample of parents who responded to questions through a secure Internet-based platform. Members of any of the partner panel providers of Qualtrics who qualified for the study (i.e., parents of children in sixth to 12th grade within one of the following ethnic groups: Caucasian, African American, Latino/a American, and Asian American) received an invitation message through their membership portal. To avoid self-selection bias, the survey invitation did not include specific details about the contents of the survey, but stated that it dealt with parenting of children in general with a specific focus on children's Internet use. Parents were asked how many children they had within the specified age range. Parents who had multiple children in the age range were asked in the beginning of the survey, randomly, to answer the questions about their youngest child, a middle child (only for parents of three or more children), or their oldest child. Parents who did not have a child within the age range did not complete the survey past the introductory questions. Upon providing informed consent, participants filled out the survey, which took approximately 40 minutes to complete. After completing the survey, participants were given a debriefing statement, which restated the purpose of the study and thanked them for their participation.

2.2. Participants

In total, 1,077 parents participated in the larger project. This sample was ethnically representative according to CENSUS data (U.S. Census Bureau, 2014) and included 703

Caucasians (65%), 168 Latino/a Americans (16%), 140 African Americans (13%), and 66 Asian Americans (6%). Additionally, the data collection was designed to ensure even distribution between parents of children in the targeted seven grades (i.e., sixth to 12th) and between mothers and fathers. The majority of the participants reported on a biological child (90%), but some parents reported about an adoptive child (5%) or step-child (5%). For the present study, only parents with biological or adoptive children were included (total $N = 1025$; 513 mothers and 512 fathers). Of the children on whom parents reported, 55% were boys and 45% were girls. Yearly family income was distributed as follows: Less than \$20,000 (8%), \$20,000-\$37,999 (16%), \$38,000-\$61,999 (25%), \$62,000-\$101,000 (28%), and over \$101,000 (23%). The median income of participants was the range of \$38,000 to \$61,999, which includes the US median income (\$53,657) in 2014 (U.S. Census Bureau, 2014). Concerning parental education, 1% had less than a high school education, 16% had a high school education only, 26% had some college or vocational education, 38% had a college degree only, and 19% had a graduate or professional degree. Compared to the U.S. population, parents in the present study had somewhat higher level of education (U.S. Census Bureau, 2014).

2.3. Measures

2.3.1. Internet-Specific PSE. We developed a measure of parents' Internet-specific PSE specifically for this project that consisted of two sets of questions. Most of these questions dealt with parents' perceptions about their ability to prevent their children from experiencing online risks, but two questions dealt with general influence on children's online activities. All questions followed the structure suggested by Bandura (2006) in constructing PSE scales, and asked about what parents *can do* rather than what they *will do*. The construction of the Internet-specific PSE scale is presented in the "Results" section and all items are listed in Table 1.

In the first set of questions, parents were asked about their ability to prevent certain negative online experiences for their children. This scale was based on a measure presented by Sorbring (2014), which asked about parents' worries concerning online risks. We used the same risks from the measure by Sorbring (2014), but asked parents the following stem question: "How *confident* do you feel in your ability to prevent your child from", followed by the eight different risks (see Table 1). Parents responded using a Likert scale ranging from 1 (*Not confident*) to 5 (*Extremely confident*).

In the second set of questions, we used two questions developed for this project that followed the structure suggested by Bandura (2006). Parents reported on their influence over children's online time and content in general ("How much can you do to influence how much time your child spends / what your child is doing on the Internet?"). These questions were asked in order to assess parents' perceptions of influence on their child's Internet use in general, rather than specific to online risks. The response options for these questions ranged from 1 (*Nothing*) to 9 (*A great deal*).

2.3.2. Parental Internet-Specific Mediation. We adapted 10 questions from earlier research on concerning practices to deal with children's online activities (e.g., de Morentin, Cortés, Medrano, & Apodaca, 2014; Liao, Khoo, & Ang, 2008; Livingstone & Helsper, 2008; Sonck et al., 2013; Vaterlaus et al., 2014). These questions were chosen because they tapped into different mediation practices that were specific to the Internet domain (i.e., active, restrictive, and monitoring of children's Internet activities), aiming at helping the child to develop positive Internet behaviors and avoid negative online experiences. The items were similar to items in established measures regarding parental reports of Internet-specific mediation, such as the measure by Sonck and colleagues (2013). However, because of the space constraints in the survey, we used fewer, but broader, items. The construction of the mediation scales is presented in the "Results" section and all items are listed in Table 2. The questions assessed

frequency of use of each practice. Response options for seven of the questions ranged from 1 (*Never*) to 9 (*Very often*); three of the questions had binary response options (Yes/no).

2.3.3. Construct Validity Measures. Parents reported on one domain-specific and one domain-general established measure of PSE (Coleman & Karraker, 2000), and parents' total score on these two scales separately were used to test for construct validity of the Internet-specific PSE scale. First, we used a 23-item domain-specific PSE scale adapted from Bandura (2006), which is a combined measure of specific tasks within different parenting domains. Parents got the following stem question: "How much can you do to..." followed by 23 outcomes. Examples of these outcomes are "...make your child see school as valuable?" "...involve yourself with your child in their leisure activities?" "...keep track of what your child is doing when he/she is outside the home?" and "...prevent your child from becoming involved in drugs or alcohol?" Response options ranged from 1 (*Nothing*) to 9 (*A great deal*). Cronbach's alpha for this scale was .96. Second, parents completed the Parental Competence Scale from the Parenting Stress Index, which is an established domain-general measure that is often used in the literature as a measure of global competency in the parenting role. Parents rated how strongly they agreed with several statements concerning perceived competence in their parenting role (Abidin, 1995). One item from the original scale was excluded as it asked about parenting infants and was not applicable to the parents in this sample. Cronbach's alpha for this scale was .74.

2.3.4. Demographic Variables. We used the following demographic variables as covariates in the analyses: Children's grade in school (as a proxy for age), children's gender, parents' gender, parents' education (ranging from "Less than high school" to "Graduate or professional degree"), and ethnicity.

2.4. Statistical Analyses

In this study, we ran all analyses using Mplus 7.11 (Muthén & Muthén, 1998-2012)

with the Maximum Likelihood estimator. Factor structures on the Internet-specific PSE items and on the Internet-specific mediation items were first examined using Exploratory Factor Analysis (EFA). For the Internet-specific mediation items, this exploratory step provided an opportunity to test if the same factors were supported in our data as have been presented in earlier research on Internet-specific parental mediation strategies (i.e., Livingstone and Helsper, 2008; Sonck et al., 2013; Vaterlaus et al., 2014). In these analyses, we compared models with 1 to 5 factors, using theoretical relevance, model fit, Eigenvalue, and parsimony as criteria for choosing the most adequate number of factors that increased the accuracy of explanatory power (see Preacher, Zhang, Kim, & Mels, 2013). The factor solutions offered in the EFAs were tested and confirmed using Confirmatory Factor Analysis (CFA). The construction of the scales is presented in the “Results” section.

After examining the factor structure of the items, we used Structural Equation Modeling (SEM) to examine the associations among the study variables. In this SEM analysis, we added regression paths between the two main predictors, Internet-specific PSE and children’s grade in school, on the one hand, and the outcome measures of Internet-specific mediation on the other. We also examined the interaction of children’s grade in school and Internet-specific PSE in predicting the level of Internet-specific mediation. Both variables in this interaction were mean centered before computing the interaction term. The additional demographic variables (children’s gender, parents’ gender, parents’ education, and ethnicity) were included as covariates in the SEM analysis.

Three indices were used to evaluate model fit: The comparative fit index, (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation, (RMSEA). CFI and TLI values close to or above .90 and RMSEA values of .06 or lower are considered indicators of an acceptable fit between the hypothesized model and the observed data (Hu & Bentler, 1999).

3. Results

3.1. Descriptive Information

Means and standard deviations for all items are reported in Tables 1 and 2. As can be seen in Table 1, means for the Internet-specific PSE items were all rather high, ranging between 3.26 and 3.70 for the first set of questions (response options from 1 to 5; with Option 3 reading “Somewhat confident” and Option 4 reading “Very confident”) and 7.18 and 6.94 for the second set of questions (response options from 1 to 9; with Option 5 reading “Some influence” and Option 7 reading “Quite a bit”). Hence, in general, parents felt somewhat or very confident and felt they could influence their children’s online activities.

For the Internet-specific mediation strategies (see Table 2), there was a larger variation, with means ranging between 2.91 and 3.94 (response options from 1 to 9 for Items 4 to 12; with Option 3 reading “Sometimes” and Option 4 reading “Often”). Examining the means, parents tended to use active mediation strategies more than any of the other strategies. Concerning the questions with binary response options, the majority of parents had installed monitoring software (60%) and had rules about time (77%) and content (86%) for the child’s Internet use.

Table 1

Factor loadings for Confirmatory Factor Analysis of the first-order Internet-specific PSE latent constructs, and descriptive statistics

Item	Prevention of problematic online activities	Influence on time and activities online	<i>M</i> (SD)
<i>How confident do you feel in your ability to prevent your child from...</i>			
1. ...coming in contact with dangerous persons?	.82		3.62 (1.04)
2. ...being bullied?	.76		3.46 (1.12)
3. ...coming in contact with inaccurate information?	.73		3.26 (1.14)
4. ...coming in contact with material that will make him/her upset?	.74		3.32 (1.11)
5. ...ending up on a website with pornographic content?	.70		3.37 (1.23)
6. ...ending up on a website with violent/gory pictures?	.71		3.29 (1.26)
7. ...ending up on a website that has hatred content against individuals or groups?	.75		3.38 (1.19)
8. ...giving out or posting personal information that could be problematic for safety reasons?	.73		3.70 (1.08)
<i>How much can you do to influence...</i>			
9. ...the time the child spends on the Internet?	.77		7.18 (1.68)

Table 2

Factor loadings for Confirmatory Factor Analysis of Internet-specific mediation constructs, and descriptive statistics

	Factor loadings				
Item	Restrict	Demand	Active	Proximity	<i>M</i> (SD)
<i>Do you have...</i>					
1. ...installed monitoring/filtering software on one or more devices that your child uses to access the Internet?	.50				-
2. ...rules about the <u>time</u> your child spends on the Internet?	.64				-
3. ...rules about what your child is allowed to <u>do</u> on the Internet?	.52				-
<i>How often do you use the following strategies?</i>					
4. Track the websites that your child has visited	.79				3.20 (1.30)
5. Check the child's messages (e.g., email, Facebook, texts)	.77				3.19 (1.35)
6. Demand to know which websites your child has visited		.89			2.91 (1.27)
7. Demand to know whom your child chats with		.88			3.18 (1.27)
8. Talk to the child about what he/she is doing on the Internet			.81		3.76 (0.95)
9. Talk to the child about potential risks that he/she can encounter on the Internet			.68		3.94 (1.00)
10. Sit with the child when he/she is online				.76	3.01 (1.10)
11. Stay nearby when the child is online				.83	3.24 (1.16)
12. Watch the screen when the child is online				.86	3.11 (1.19)

Note. Standardized factor estimates. Response options for Items 1-3: Yes/No; Items 4-12: 1 (*Never*) to 9 (*Very often*). *N* = 1025.

3.2. Measurement Models Properties

3.2.1. Internet-specific PSE. An EFA showed that the Internet-specific PSE items represented two separate factors, with few item cross-loadings. Based on these results, we performed a second-order CFA with the two factors representing two first-order latent variables (“Prevention of problematic online activities” and “Influence on time and activities online”), and one second-order latent variable measuring an overall Internet-specific construct (with the two first-order latent variables as indicators). In this CFA, we examined the correlations among items that measured parents’ confidence in preventing the child from coming in contact with inaccurate or negative material / information (i.e., Items 3 and 4). The factor loadings for the first-order factors are reported in Table 1. This CFA reached acceptable fit for the data, $\chi^2 = 93.25$ (23), $p < .001$, RMSEA = .06, CFI = .99, TLI = .98. For the Internet-specific construct, the factor loadings were .54 and .76 (for the “Prevention of problematic online activities” and the “Influence on time and activities online” indicators, respectively).

3.2.2. Construct validity of the Internet-specific PSE measure. To examine the construct validity of the Internet-specific PSE measure, we examined the associations between the second-order latent variable of PSE and other measures that should, theoretically, be related to this variable. As expected, the PSE variable correlated significantly with Bandura’s self-efficacy measure ($r = .59, p < .001$) and the domain-specific measure ($r = .59, p < .001$) and the domain-general Parental Correlates Scale ($r = .29, p < .001$), indicating strong convergent validity.

3.2.3. Internet-specific mediation. To examine the different categories of Internet-specific mediation, we started by performing an EFA on all 12 items. The results showed that a two-factor solution offered the best fit to the data, which was confirmed by an acceptable fit for the data in a CFA, $\chi^2 = 149.42$ (44), $p < .001$, RMSEA = .05, CFI = .95, TLI = .92. The factor loadings and scale constructions are reported in Table 2.

The first category represented parents' "restrictive mediation and online monitoring" (five items in total) including items of parental rules, tracking of the child's online activities, and usage of monitoring software programs. Hence, this category addressed direct rules of which the child is probably aware, as well as parenting strategies (to keep track of the child's activities) of which the child might be unaware. The second category reflected "demands for child disclosure" (two items) and assessed demands for the child to give information about his or her online activities. The third category was parents' "active mediation" (two items), which included items regarding discussions with the child about the Internet. The fourth category was parents' "mediation through proximity" (three items), which assessed parents' presence when the child uses the Internet, without actively interfering with the activities (e.g., staying nearby when the child is online).

3.3. Predictors of Internet-Specific Mediation from the SEM

3.3.1. Covariates for the level of Internet-specific PSE and Internet-specific mediation.

Parental education was the only demographic variable significantly associated with Internet-specific PSE: Parents with higher education reported lower levels of PSE ($\beta = -.10, p = .027$). Parental education was also the strongest demographic predictor of Internet-specific mediation. The higher education, the more parents used mediation through proximity ($\beta = .09, p = .007$), and endorsed more restrictive mediation and online monitoring ($\beta = .10, p = .010$). Additionally, mothers tended to report more active mediation than did fathers ($\beta = .20, p < .001$). None of the other covariates were significantly linked to the level of Internet-specific mediation.

3.3.2. Associations among Internet-specific PSE, child's grade, and Internet-specific

mediation. The analytical model is presented in Figure 1. This model showed an acceptable fit to the data, $\chi^2 = 778.83 (268), p < .001$, RMSEA = .04, CFI = .90, TLI = .86, and the results are reported in Table 3.

Figure 1. Analytical model of associations among the main study variables. Additional estimates not shown in figure: Associations among the four mediation constructs, regression paths between additional covariates and all four mediation constructs. Restrictive / monitoring = Restrictive mediation and monitoring; Demand disclosure = Demand child disclosure; Proximity = Mediation through proximity; First-order Internet prevent = Parents' beliefs about being able to prevent problematic online activities; Second-order Internet influence = Parents' beliefs about their influence on children's time and activities online.

Table 3

Results of the SEM examining the associations between Internet-specific PSE, child's grade in school, and Internet-specific mediation.

Association	β	SE	p
Internet-specific PSE $\rightarrow$ Restrictive mediation and monitoring	.69	0.04	<.001
Internet-specific PSE $\rightarrow$ Demanding child disclosure	.56	0.04	<.001
Internet-specific PSE $\rightarrow$ Active mediation	.68	0.04	<.001
Internet-specific PSE $\rightarrow$ Mediation through proximity	.53	0.04	<.001
Child's grade $\rightarrow$ Restrictive mediation and monitoring	-.14	0.04	<.001
Child's grade $\rightarrow$ Demanding child disclosure	-.15	0.04	<.001
Child's grade $\rightarrow$ Active mediation	.01	0.04	.878
Child's grade $\rightarrow$ Mediation through proximity	-.15	0.03	<.001
Demanding child disclosure $\leftrightarrow$ Restrictive mediation and monitoring	.73	0.04	<.001
Demanding child disclosure $\leftrightarrow$ Active mediation	.34	0.05	<.001
Demanding child disclosure $\leftrightarrow$ Mediation through proximity	.64	0.03	<.001
Restrictive mediation and monitoring $\leftrightarrow$ Active mediation	.52	0.07	<.001
Restrictive mediation and monitoring $\leftrightarrow$ Mediation through proximity	.55	0.05	<.001
Mediation through proximity $\leftrightarrow$ Active mediation	.36	0.05	<.001
Internet-specific PSE $\leftrightarrow$ Child's grade	-.19	0.05	<.001

Note. $N = 1025$.

In support of our first hypothesis, the results showed that higher levels of Internet-specific PSE (second-order latent variable) were associated with more of all types of Internet-specific parental mediation. However, four of these associations differed significantly in strength: Internet-specific PSE was more strongly linked to “active mediation” than to “mediation through proximity” ($\chi^2\Delta = 6.16 (1), p = .013$) and to “mediation through proximity” ($\chi^2\Delta = 9.42 (1), p = .002$), and the association between Internet-specific PSE and “restrictive mediation and online monitoring” was stronger than the links between Internet-specific PSE and “mediation through proximity” ($\chi^2\Delta = 10.21 (1), p = .001$) and Internet-specific PSE and “demanding child disclosure” ($\chi^2\Delta = 8.20 (1), p = .004$).

The second hypothesis suggested that Internet-specific PSE and mediation would differ as a function of the child’s grade in school. The majority of the results supported this hypothesis. Internet-specific PSE and children’s grade correlated significantly, showing that Internet-specific PSE was lower among parents of children in higher grades. Additionally, parents of adolescents in higher grades used less “restrictive mediation and online monitoring” and less “mediation through proximity”, and they demanded less child disclosure than did parents of adolescent children in lower grades. In contrast, however, parents used “active mediation” independently of the child’s grade.

Although we had no hypotheses about it, we tested the interaction between Internet-specific PSE and children’s grade in school as a predictor of Internet-specific mediation strategies. The interaction was not significant. Thus, grade in school and Internet-specific PSE were each uniquely linked to the level of Internet-specific mediation strategies, but these links did not differ depending on one another.

4. Discussion

In line with theory (Bandura, 1997) and earlier research (e.g., Glatz & Buchanan, 2015a; Shin, 2017; Slagt et al., 2012), this study offered empirical support for the link

between Internet-specific PSE and various Internet-specific mediation strategies.

Additionally, the child's grade in school (as a proxy for age) was a significant correlate of both Internet-specific PSE and Internet-specific mediation. Within the age range of children represented (early to late adolescence), parents of older adolescents reported less control-based mediation and lower levels of Internet-specific PSE than did parents of younger adolescents.

4.1. Internet-Specific PSE

Despite theory and research on PSE, Internet-specific PSE is a new area of research and there were no existing quantitative measures of this construct. Thus, in this study, we introduced a measure of Internet-specific PSE that was developed based on other task-specific PSE measures. We examined its measurement properties and, to test construct validity, its association with other established PSE measures (both domain-specific and domain-general). The measure consisted of two distinct indicators of an overall, higher-order, Internet-specific PSE construct. The overall construct correlated in expected ways with other established PSE measures, suggesting that it measured similar parental cognitive processes, but was distinguished by the specific context being measured (i.e., children's Internet use). Hence, this result indicates that this measure has strong convergent validity as it shows a correspondence with similar concepts. The introduction of this measure is an important addition to the area of research on PSE in general, and parenting of children's Internet use in particular. With this systematic examination and validation, future research can make use of this measure when studying parental self-efficacy about Internet-related behaviors and outcomes.

Overall, the descriptive data that emerged from these measures suggested that parents felt more confident than unconfident in their abilities to influence the child's Internet activities. This contrasts with parents of adolescents in the study by Symons and colleagues

(2017) who ascribed themselves a minimal role in the socialization of their adolescents' Internet activities. Hence, the result of the study by Symons and colleagues (2017)—which can be considered somewhat exploratory because of the qualitative design and small sample size—was not replicated in our larger sample of parents. Although Internet-specific PSE overall was relatively high, there was, of course, variability. This variability was partly explained by parental education. Parents with higher levels of education reported lower levels of Internet-specific PSE. This significant correlation is somewhat surprising given weak or positive correlations found in studies on PSE in other domains (e.g., Coleman & Karraker, 2000; Glatz & Buchanan, 2015b), and might represent something specific to the Internet domain. In the present study, parental education was positively linked to all mediation strategies except active mediation. Use of mediation strategies likely gives parents an insight into potential online risks, which might be linked to reductions in beliefs about influence, and, thus, might explain why highly educated parents in the present study felt less efficacious. More studies are needed to further understand Internet-specific PSE and the association with parental education. To summarize, although the Internet might be a context that is particularly difficult for parents to control, parents in this study, on average, felt confident in their abilities to prevent their children from experiencing negative aspects on the Internet as well as having an influence on the time children spend online.

4.2. Internet-Specific Parental Mediation

In this study, we examined the factor structure of previous items of Internet-specific mediation to test whether the same factors were supported in our data as have been found in earlier research. The results showed both similarities and differences to earlier research. Our category of active mediation was similar to the one found in the study by Sonck and colleagues (2013), but two differences appeared compared to earlier studies—categories we termed restrictive mediation and demands for information.

The “restrictive mediation” scale that emerged from our analyses did not distinguish between monitoring (checking online activities), rules, and restrictive techniques (software filtering), in contrast to the measure reported by Sonck and colleagues (2013). Thus, in our data, one overall category of strategies aiming at restricting or monitoring the child’s online activities was a better reflection of parenting practices than distinguishing between these various restrictive approaches. In addition, our data supported a category encompassing “parents’ demands to get information” from the child about his or her online activities. This category involved a parental communicative aspect to find out about the child’s online activities, but in contrast to the “active mediation” category, it seemed to capture a more authoritarian or controlling approach. The difference between our restrictive category and the one found in the study by Sonck and colleagues might be explained by differences in the number and specificity of the questions. For example, Sonck and colleagues (2013) used seven questions to capture restrictive content mediation (e.g., rules about watching clips, rules about using instant messaging, and rules about giving out personal information) whereas in the present study, we used fewer and broader questions (e.g., rules about time spent on the Internet and rules about online activities in general). It is likely that the different levels of specificity led to different types of categories.

In this study, we also found a category of mediation that encompassed parents’ attempts to keep track of children’s activities through proximity, but without actively talking to the child or using other monitoring strategies, such as checking browser history. This category is similar to the co-viewing category uncovered in research on parenting of children’s use of other media outlets (Nathanson, 1999; Nikken & Jansz, 2006; Valkenburg et al., 1999), but differs in one important respect. The co-viewing category in research on television viewing and video gaming describes a shared parent-child activity (e.g., watching television together) whereas our category describes the parent as present without necessarily sharing or being part

of the online activity. Thus, our scale encompasses something different than what traditionally was implied by co-viewing. This makes sense, as Internet use is often a solitary medium and not necessarily a shared activity between the child and the parent (Livingstone & Helsper, 2008; Valkenburg et al., 2013). Similar items were included in the study by Sonck and colleagues (2013), but were not used in analyses because children's reports of these activities did not load on the same factor as did parents' reports. Nonetheless, in that study, parent reports of sitting next to the child or staying nearby the child loaded on the same factor, which indicates a similar category as was found in the present study. We did not have child report of these constructs available, so it is possible that the co-viewing construct is parent-specific, and a mediation practice not easily apparent to children.

An additional reason for different findings concerning categories of parenting mediation in earlier studies and the present study might be different cultural contexts. Studies have been performed in different countries, and as with parenting in general, the cultural context might be of importance for the type and the frequency of Internet-specific mediation practices (e.g., Lansford et al., 2005). For example, attitudes about children's Internet use and concerning parents' authority over such activities might differ by culture, leading to different practices and different constellations of practices. Future research should continue to validate measures of Internet-specific mediation strategies in different cultures and among different sub-groups of parents.

4.3. The link between Internet-Specific PSE and Internet-Specific Mediation

In support of our first hypothesis and earlier research (Shin, 2017), higher levels of Internet-specific PSE were linked to more Internet-specific mediation in general. Hence, parents who believed in their abilities to influence the child's Internet use tended to use more Internet-specific mediation of all kinds than did parents who doubted their abilities to influence. This is the first study to examine and show that PSE specific to the Internet

domain, rather than general PSE (Shin, 2017), is a significant predictor of various Internet-specific mediation practices. These data suggest that parents who feel efficacious make use of a variation of methods perhaps motivated by the idea that any parental involvement might be better than none, or that all these methods are as effective. Although all links between Internet-specific PSE and mediation were significant, there was a tendency for parents with higher levels of Internet-specific PSE to especially use strategies involving rules and monitoring, but also to engage in active discussions about the Internet with the child. Parents might perceive it important and especially effective to combine these two strategies because they might result in more information about and influence on the child's online behaviors.

4.4. Developmental Differences in Internet-Specific PSE and Mediation

Our second hypothesis concerned developmental differences in Internet-specific PSE and mediation, and was supported by the results. The level of Internet-specific PSE differed significantly by the child's age: Parents of older adolescents reported lower levels of Internet-specific PSE than did parents of younger adolescents. This result is in line with earlier research on general PSE (Ballenski & Cook, 1982; Glatz & Buchanan, 2015b), and the age trends from two qualitative studies on parental perceptions of their role as socializing agents (Shin, 2015; Symons et al., 2017). In addition to reflecting a more general and documented decline in PSE overall as children move through adolescence, research on parental mediation practices offers potential explanations for the developmental changes in Internet-specific PSE. First, adolescents have more venues to use the Internet via smartphones, tablets, and computers (Madden, Lenhart, Duggan, Cortesi, & Gasser, 2013), which makes it increasingly difficult for parents to monitor adolescents' online behavior as adolescents spend increasing amounts of time away from parents (Larson, Richards, Moneta, Holmbeck, & Duckett, 1996). Second, the increased need and bids for autonomy, particularly in areas that adolescents perceive as personal (e.g., the Internet, Soenens, Vansteenkiste & Niemiec, 2009; Symons et

al., 2017; Valkenburg et al., 2013), might contribute to parents' decreased confidence in and increased questioning of their ability to have an influence in this domain.

With respect to developmental differences in Internet-specific mediation, in line with earlier research (e.g., Livingstone & Helsper, 2008; Lee, 2012; Padilla-Walker et al., 2012; Sonck et al., 2013), parents of older adolescents were less likely to use the most intrusive mediation methods (i.e., restrictive mediation and online monitoring, demanding of child disclosure, and mediation through proximity) than were parents of younger adolescents. There was no difference, however, in the use of active mediation depending on the child's grade in school, a finding also consistent with earlier studies (Sonck et al., 2013; Shin, 2017). Our findings, and those of others, indicate that collaborative parenting practices are less likely to change over the adolescent period than more restrictive and authoritarian practices. Placing these results in a broader developmental and theoretical context, this pattern is consistent with a general pattern of declining parental control but stable parental warmth at the transition to and over the course of the adolescent period (e.g., Collins, Madsen, & Susman-Stillman, 2002).

4.5. Limitations, Strengths, and Future Directions

One limitation of the current study is the cross-sectional design, which does not allow us to draw conclusions about direction of effects. Although our findings are consistent with theory and past longitudinal research indicating causal effects of PSE and child's age on parenting, other explanations are possible. For example, parenting practices might influence the level of PSE, rather than or in addition to the opposite (e.g., Glatz & Buchanan, 2015a). Additionally, although age differences might represent development over time, these differences could also reflect cohort effects, as there have been rapid changes in Internet availability to and usage overall, and by children, in recent years. Variables not measured, such as parent's age and their Internet literacy might represent third variables that explain the

associations found. In fact, parents of younger children now include Millennials who probably have more Internet literacy than do parents of older children. Less familiarity with the digital environment might contribute to a higher sense of inadequacy, and together with little precedent or guidance for monitoring the Internet, such unfamiliarity might compound parents' uncertainty about their potential influence (De Morentin et al., 2014). Future studies examining changes over time using longitudinal data and measuring the potential confounds we have suggested (i.e., parents' age and Internet literacy) would illuminate whether the conclusions we have drawn based on theory and previous research are supported in this domain of parenting.

An additional limitation of this study concerns the lack of child reports, particularly on their Internet behavior (the outcome of ultimate interest). As an initial exploration of the potential role of PSE in parenting practices in this relatively new area of parenting (Internet usage), we focused on parents' beliefs and professed behaviors. It will be important to build on this work by including children's reports of their parents' mediation practices, and especially their Internet use and behaviors.

Finally, although this study offers theoretical and methodological contributions to the field, it represents only a first step. For example, the majority of the Internet-specific PSE items dealt with parents' beliefs specifically about being able to prevent their children from experiencing negative aspects online. A broader measure would include aspects of parents' abilities to not only minimize the negative impact, but also to maximize benefits of online activities. To better understand this parenting context, more methodological work on Internet-specific PSE and mediation scales is needed.

Strengths of this study include a large sample that is representative of the United States' population with respect to parents' gender and ethnicity. We controlled for the potential impact of these and other demographic variables in studying the associations between

Internet-specific PSE and Internet-specific mediation, which increases the likelihood that these associations in fact reflect associations between parental self-efficacy and parenting practices in the Internet domain. Additionally, this study introduced and validated a quantitative measure of Internet-specific PSE, allowing measurement of a construct that seems critical to parenting in the 21st century.

4.6. Theoretical and Practical Implications

The results of this study have important implications for theory development. Specifically, the results point to the importance of parents' perceptions about their ability to influence their children's Internet use and, thus, help to explain why parents vary in employing Internet-specific mediation strategies to minimize their children's exposure to online risks. Additionally, the results increase understanding about how parents' perceptions of their parenting role, and their behaviors, change as a function of the child's age across the adolescent years. Although parents decrease in perceived influence over the course of the adolescent period, perhaps illustrated by a reduced use of control practices, they still retain general engagement in the form of discussions with the child about the Internet.

In addition to theoretical implications, the findings of this study have implications for practitioners who meet with parents. As the Internet becomes a universal part of everyday life, it is more important than ever for parents to be able to protect children from online risks. Because such efforts are at least partly influenced by parents' beliefs that their efforts matter, and because earlier research shows that parents have an important role in socializing their children's Internet behaviors, practitioners can remind parents that they indeed have an influence on their child's values and behavior in this domain and their efforts are likely to be worthwhile. Though it is not always easy for parents to remain actively involved in their child's Internet use, our findings bolster previous research indicating that the overall goal should be to encourage parents to sustain such involvement.

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