



Longitudinal associations between positive parenting and youths' engagement in sexting behaviors: The mediating role of filial self-efficacy beliefs

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ARTICLE INFO

Handling editor: Catalina L. Toma

Keywords:

Positive parenting
Filial self-efficacy
Sexting behaviors
Youth development

ABSTRACT

Youths who enter emerging adulthood with a background of familial relations grounded in positive parent-child interactions are better equipped to cope with transitional stressors, to voice effectively their opinions with parents, and to resist engaging in risky activities. However, little is known about the longitudinal associations between positive parenting, filial self-efficacy beliefs and youths' engagement in sexting behaviors. This study examined if positive parenting (mothers' and fathers' reports at children ages 13, 14, and 15) were related to youths' engagement in sexting behaviors (child's reports at age 19) both directly and indirectly, through adolescents perceived filial self-efficacy beliefs (child's reports at age 18). Participants included 194 Italian children ($M_{AgeAtTime1} = 13.54$, 52.6% girls), their mothers ($n = 193$), and fathers ($n = 150$), who provided data across five waves over seven years. The mediation model was tested through a path analysis. Overall, results showed that, controlling for child gender and family SES, the effect of positive parenting on sexting behaviors was fully mediated by higher levels of perceived filial self-efficacy beliefs. The study reveals filial self-efficacy beliefs as central to the benefits conveyed to teens by parents in reducing their sexting behaviors.

1. Introduction

In today's era of the Internet and mobile devices, youths' daily lives are increasingly characterized by social media, constant connectivity, and virtual interpersonal exchanges (George & Odgers, 2015). Although the use of the Internet and online social networking sites is essential for youths' self-expression and identity, behavior modelling, peer support, learning, entertainment, and pleasure (Van Deursen & Helsper, 2018), the Internet is also creating new outlets for different types of online risky behaviors, such as the enactment of sending and receiving images, and/or videos of a sexual nature (i.e., sexts) via electronic devices (i.e.,

sexting; Klettke, Hallford, & Mellor, 2014).

Sexting is especially relevant during the transition to emerging adulthood (around age 19; often on completion of high school; e.g., Hudson & Fetro, 2015), a stage of development characterized by emerging independence, identity formation challenges, sexual exploration, and the formation of romantic relationships (Arnett, 2000). Different cultures have varying ages at which the transition to emerging adulthood occurs. With respect to Italy, the Mediterranean model (Scabini, 2000) highlights that this transitional period is characterized by a prolonged coresidence with parents, which usually ends with marriage. Because most Italian young people do not work until they

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<https://doi.org/10.1016/j.chb.2024.108320>

Received 22 June 2023; Received in revised form 23 May 2024; Accepted 27 May 2024

Available online 29 May 2024

0747-5632/© 2024 Published by Elsevier Ltd.

finish school, their transition towards emerging adulthood takes place within the family (Buhl & Lanz, 2007). Indeed, to date, reports indicate that 67.6% of young adults aged 18–34 live with their parents in Italy, with emerging adults aged 19–24 representing the largest group (Istat, 2021; Statista, 2021). Moreover, in Italy, emerging adults account for the audience that spends more time on entertainment, social networking, and instant messenger websites (Statista, 2022) and, as such, they may be more vulnerable than other age groups to engage in sexting behaviors.

Although increasing awareness of the associated risks of sending and receiving sexts (e.g., coercion, harassment, and victimization; Madigan et al., 2018), there has been limited research concerning the antecedents that may prevent youths from engaging in sexting behaviors. One theoretical framework that may inform about the predictors of sexting is Bandura's Social Cognitive Theory (SCT; Bandura, 1997).

According to Bandura's SCT (1997), if the environment (e.g., parents) provides supportive conditions, then adaptive functioning through the transition to emerging adulthood is more readily achieved. More specifically, Bandura claims that human agency (i.e., "the power to originate action"; Bandura, 2001, p. 3) operates within an interdependent causal structure involving three interacting determinants: the environment, personal characteristics, and behavior. The environment encourages (or discourages) specific behaviors (Bradley & Corwyn, 2001) that are influenced by intrapersonal factors, such as children's "beliefs in their capabilities to organize and execute the courses of action required to produce given attainments" (i.e., self-efficacy beliefs; Bandura, 1997, p. 3). For example, parents who engage in positive parenting practices will potentially engender high self-efficacy beliefs in the adolescent. Efficacious beliefs, in turn, may influence the adolescent's behavior through increased motivation and persistence in pursuing a desired goal, thus mediating the relationship between the environment and the child's behavior. Thus, the success with which the risks and challenges of children's transition to emerging adulthood are managed depends on the strength of personal efficacy (Bandura, 1997).

Focusing on the proactive role that young people may exert in the domain of interpersonal and social relations, adolescents' perceived capability to exercise their expanding agentic role in their relationships with their parents (i.e., filial self-efficacy) has been shown to protect against the engagement in, and potential negative consequences of, some harmful behaviors (e.g., delinquent behaviors; Caprara et al., 2010). However, to our knowledge, no researchers have analyzed the association of filial self-efficacy with the enactment of sexting. Given that filial self-efficacy is situated in a context of interdependence with parents and that it enables adolescents to elude hazardous and detrimental pathways (Caprara, Regalia, & Scabini, 2006), one may argue that positive parenting in concomitance with higher levels of filial self-efficacy may be highly important protective factors for youths' engagement in sexting behaviors.

Thus, the aim of the present study was three-fold: (1) to investigate the overall consistency of mothers' and fathers' evaluations of their positive parenting practices during adolescence (children ages 13, 14, and 15), as an index of overall positive parenting; (2) to account for both mothers' and fathers' reports of their positive parenting to examine to what extent positive parenting is associated with youths' subsequent perceptions of their filial self-efficacy beliefs (child age 18) and their engagement in sexting behaviors (child age 19); (3) to investigate if youths' perceptions of their filial self-efficacy mediate the relation between positive parenting and engagement in sexting behaviors.

1.1. Positive parenting and youth adjustment

Parents and their parenting practices are known to be the most proximal influence on many aspects of youth development. In fact, parents directly influence child behaviors and cognitions by the beliefs they hold and the behaviors they exhibit (Lewis, 2012).

Several theoretical approaches (Dishion & Patterson, 2006;

Patterson, 1982) and numerous investigations (e.g., Laursen & Collins, 2009; Ratliff et al., 2023) have shown the importance of familial relationships grounded on positive parent-child interactions in supporting youth's autonomy while also granting the emotional support needed to face weather stressors and adversities children may experience in their transition from adolescence to emerging adulthood. According to social learning theory (Dishion & Patterson, 2006; Patterson, 1982), children learn and develop their beliefs and behaviors based on their experiences and the feedback they receive from their environment. The family environment is the primary source of many of these experiences and family members (e.g., mothers and fathers) are rich sources of information about the dynamics of the family system (Cook & Goldstein, 1993). That is, mothers' and fathers' joint capabilities to operate in concert are at least partially a response to a common observable reality.

Among the central questions in the conceptualization of parenting are: What are the long-term effects of early parenting practices on children's development? And, how much consistency in parent-child interactions should we expect to observe when children move from adolescence to emerging adulthood? Early work by Whitbeck, Hoyt, and Huck (1994) used a social learning perspective to argue that patterns of family interaction learned early in life persist over time, and learned patterns are invoked when new situations occur. Families who have learned to communicate effectively or who have established positive relational patterns with their children are more likely to be able to successfully establish patterns of support and exchange during their children's transition to emerging adulthood than families characterized by greater conflict and less emotional closeness (Aquilino, 1997).

Positive parenting practices, such as praise and involvement, influence child development throughout the lifespan (Patterson, Reid, & Dishion, 1992). In particular, parental praise represents a positive expression of social feedback and verbal reward recognizing children's positive behaviors, whereas involvement occurs when parents show children love and attention, such as spending time with them and attending to what they say and do (Forgatch & Patterson, 2010). When positive parenting practices are maintained and are consistent across time, they are more effective than other parenting behaviors (e.g., coercive parenting) in reducing child behavioral problems (Forgatch et al., 2008; Patterson, Forgatch, & Degarmo, 2010).

Previous longitudinal (Boeldt et al., 2012; Eisenberg et al., 2005; Forbush & Wike, 2023; Pastorelli et al., 2016; Zietz et al., 2022) and meta-analytic (Kawabata et al., 2011) studies have established a clear link between positive parenting practices and youth adjustment. For instance, in a longitudinal study among parents and children from 12 cultural groups followed from years 12 to 15, Zeitz and colleagues (2022) found that positive parenting at age 12 negatively predicted adolescents' externalizing behaviors at age 14. Similarly, Boeldt et al. (2012) found that the association between positive parenting, assessed during toddlerhood (children ages 5, 7, 8, and 9 months), and children's externalizing behaviors, assessed from early childhood through adolescence (from child age 4 to 12), was negative, with children of mothers who showed significantly more positive parenting having lower levels of externalizing behaviors. Taken together, previous studies suggested that if parents engage in positive parenting practices, they create safe and nurturing environments, which promote desirable child behaviors and prevent undesirable ones (Lansford et al., 2014; Sanders, 1999).

Despite the premise that positive parenting is important across child developmental phases, most of the aforementioned studies relied on single-informant and cross-sectional data, thus not capturing how mothers' and fathers' shared experience of their positive parenting is longitudinally associated with the behaviors of their emerging adult children. As such, in this study, we considered a multi-informant construct of positive parenting, able to capture mothers' and fathers' conjoint parenting roles, shared experience of their positive parenting and their overall consistency across children's adolescence.

1.2. Filial self-efficacy beliefs

Initial efficacy experiences are centred in the family and the home environment, with mothers and fathers being the primary efficacy-promoting influences (Bandura, 1997). Parents who are responsive to their children's communicative behaviors and who create opportunities for efficacious actions provide their children with a base for developing a sense of personal control and self-worth that helps them believe they can be successful in obtaining desired outcomes (Bandura, 1995, 2006b; Werner & Smith, 1992).

However, as children mature and develop, the parent-child relationship changes in form and locus of guidance (Bandura, 1997). During the childhood years, parent-child interactions are centred heavily within the family. As adolescents move increasingly into the larger social world outside the home, parents become less salient in their young adults' day-to-day living and start to rely on their children's personal standards and self-regulatory capabilities to serve as guides and deterrents in nonfamilial contexts. Adolescents, therefore, play an increasingly agentic role in this distal guidance process, characterized by a gradual decrease in the amount of responsibility taken by parents (Ralph, 2018).

Perceived Filial Self-efficacy Beliefs (PFSBs) refer to adolescents' beliefs in their capability to establish and maintain good relationships with their parents while voicing their opinions and negotiating their freedom (Caprara et al., 2005; Caprara et al., 2006; Regalia et al., 2001). These capabilities include adolescents' beliefs that they can establish open communication with parents about personal problems, keep close emotional ties with parents, get parents to understand their point of view, manage negative emotions when they have conflicts with their parents, and act assertively in such a way that their parents can develop a good opinion about their behaviors (Caprara et al., 2005).

Limited studies have shown that PFSBs both predict good functioning of the family and counteract depression and delinquency during the transition to adulthood (Caprara et al., 2005; Caprara et al., 2010; Caprara, Regalia, & Scabini, 2006). For instance, in a longitudinal study, parental self-efficacy beliefs to cope with family demands significantly affected adolescents' filial self-efficacy, which in turn negatively affected antisocial behaviors (Caprara, Regalia, & Scabini, 2006). That is, adolescents' confidence in their ability to manage their relationships with their parents mediated the relation between parental self-efficacy beliefs and adolescents' antisocial behaviors, confirming that managing relationships with parents during adolescence strengthens and improves adolescents' adjustment. Although these findings showed that parents affect their children's behavioral and psychosocial outcomes primarily through the intervening effect of filial self-efficacy, the literature on the role of PFSBs is still understudied, especially regarding sexting behaviors.

1.3. Emerging adults and sexting behaviors

Recent systematic reviews (Klettke et al., 2014; Madigan et al., 2018) and meta-analyses (Mori et al., 2020, 2022) on sexting among youths revealed that the prevalence of receiving sexts was higher than the prevalence of sending sexts, with rates increasing as a function of age. For instance, Mori et al. (2020) showed that, on average, 38.3% of emerging adults (≥ 18 years old) reported sending a sext, whereas 41.5% reported receiving a sext. Although some studies collapsed sending and receiving sexts together to indicate overall participation in sexting behaviours (Benotsch et al.; Dake et al., 2012), others delineated differences in sexting behaviours by measuring active (e.g., sending) and passive (e.g., receiving) forms of sexting (see Klettke et al., 2014 for a review). For instance, Pistoni et al. (2023), in a sample of 1866 Italian adolescents aged between 13 and 19 years old found that boys were more likely to receive sexts than girls, whereas girls had a higher rate of sending sexts than boys (Hunter et al., 2021). In fact, literature suggests that males receive more sexts because they may be more likely than females to pressure others into sending sexts, whereas females might feel

more pressured into sending sexts than males out of the fear of not being able to start a romantic relationship with boys they like (Van Ouytsel et al., 2017) or to receive feedback from friends about their appearance (Burkett, 2015).

Sexting has been explored within the frameworks of both normative sexual behavior and risky and deviant behavior, ranging from no negative consequences at all to dating violence, online grooming, cyberharassment, and pornography-related charges (Döring, 2014; Kosenko, Luurs, & Binder, 2017; Levine, 2013; Morelli et al., 2017). According to the normalcy perspective, young people engage in sexting to address their developmental tasks and needs. Sexting, in fact, has been associated with greater relational and sexual satisfaction (Drouin, Coupe, & Temple, 2017), higher self-esteem and body appearance confirmation (Bianchi et al., 2017) and greater relational bonds and friendship quality (Dolev-Cohen, 2023; Foody et al., 2023). Conversely, in line with the deviancy perspective, sexting has been considered a risky behavior because it is related to a certain likelihood of unwanted outcomes (e.g., senders cannot control whether photos and videos they send online are forwarded, posted, or shared). In this line, sexting has been associated with social pressure from peers and romantic partners (Van Ouytsel et al., 2014; Walrave, Heirman, & Hallam, 2014) and other externalizing behaviors, such as unprotected sex (Kurup et al., 2022), smoking, substance use, alcohol abuse, and binge drinking (Dir, Cyders, & Coskunpinar, 2013; Temple & Choi, 2014). Thus, although sexting may meet the developmental needs of young people, it can also be considered a risky behavior based on its potentially negative effects on psychological well-being (Klettke et al., 2014; Levine, 2013).

In framing emerging adults' sexting within the SCT (Bandura, 1986; 1997), it is important to consider both environmental and individual factors that may shape sexting behaviors. In regards to environmental factors, and more specifically to the family context, better parent-child communication (e.g., Bianchi et al., 2019; Dolev-Cohen & Ricon, 2022), parental monitoring (e.g., Pistoni et al., 2023; Tomić, Burić, & Štulhofer, 2018), and parental knowledge (e.g., Confalonieri et al., 2020; Cucci et al., 2023) have been found to negatively predict adolescents' sexting behaviors. However, the existing literature has been largely correlational, and far less attention has been devoted to understanding the developmental processes that escalate youths' sexting behaviors. We could locate only two studies of the longitudinal influence of the family environment on sexting in adolescence (12–18 years old): a study by Baumgartner, Sumter, Peter, and Valkenburg (2012) with a sample of Dutch adolescents and Burić, Garcia, and Štulhofer (2020) with a Croatian sample. An overtime adverse (Burić et al., 2020) and less cohesive family environment, in which each member knew little about the others (Baumgartner et al., 2012), were related to frequent sexting and low levels of psychological well-being. These results indicate the need for future research on the role of developmentally specific factors, such as positive parenting, for sexting.

In regards to individual factors, high levels of self-efficacy beliefs along with supportive parent-child relationships (e.g., open communication, parental monitoring, and family satisfaction) enable parents and adolescents to elude hazardous and detrimental pathways (Bandura et al., 2011; Caprara, Regalia, & Scabini, 2006). Children who enter adolescence and emerging adulthood with a weaker perceived self-efficacy have an increased likelihood of engaging in risky behaviors, such as drug use and abuse, alcoholism, inability to resist sexual encounters (Bandura, 1997), as well as engagement in sexting behaviors (Wilson et al., 2021).

However, to our knowledge, no studies have investigated the longitudinal effects of positive parenting and filial self-efficacy beliefs in shaping adolescents' engagement in sexting behaviors.

1.4. The present study

Existing evidence suggests that more longitudinal research is needed to investigate the role of positive parenting in adolescents' sexting, and

the possible mechanisms underlying this relation (Bianchi et al., 2019). In the present study, we aimed to fill these gaps by examining the longitudinal relations between positive parenting, filial self-efficacy beliefs, and receiving and sending sexts across five waves over seven years, representing children’s transition from adolescence to emerging adulthood (approximately from 13 to 19 years old). Moreover, to overcome differential biases in reporting and to capture whether and how the overall consistency of parenting was related to child development outcomes, we used mothers’ and fathers’ reports of their positive parenting (at children ages 13, 14, 15) and children’s reports of their filial self-efficacy beliefs (at child age 18) and engagement in sexting behaviors (at child age 19).

We hypothesized that: (1) there would be an overall consistency of mothers’ and fathers’ reports of their positive parenting over time, such that a mother/father who exhibits more positive parenting at one time will also exhibit more positive parenting a year later; (2) positive parenting established when children were adolescents would be related to higher levels of perceived filial self-efficacy beliefs and to lower engagement in sexting behaviors; (3) adolescents’ perceived filial self-efficacy beliefs (at age 18) would mediate the relation between positive parenting (at ages 13, 14, 15) and later engagement in sexting behaviors (at age 19). Moreover, because prior studies evidenced gender and income status differences in positive parenting (Zietz et al., 2022), self-efficacy beliefs (Ardelt & Eccles, 2001), and sexting behaviors (Mori et al., 2022), we controlled for child gender and socioeconomic status (SES) in our analyses.

2. Method

2.1. Participants

Participants were drawn from a larger, cross-cultural longitudinal study of parenting and child development (i.e., Parenting Across Cultures; PAC; e.g., Lansford et al., 2014). Data for the present study included 194 Italian children ($M_{AgeAtTime1} = 13.54, SD = 0.62$; 52.6% girls), their mothers ($n = 193$), and fathers ($n = 150$), who provided data across five waves over seven years (between 2013 and 2020; when child participants were approximately ages 13–19). Mothers’ and fathers’ reports were obtained at T1, T2, and T3 (when children were respectively 13, 14, and 15 years old, on average), and child reports were obtained at T4 and T5 (when children were respectively 18 and 19 years old, on average). Age information across measurement time points is reported in Supplementary Materials Table S1. Most parents were married or cohabiting (84.3%) and had approximately a high school education (Mothers’ $M_{EducationYears} = 11.82, SD = 4.88$; Fathers’ $M_{EducationYears} = 11.74, SD = 4.72$). A low gross annual household income (less than €16,000) was reported by 42.5% of the sample. At T5, when adolescents were 19 on average, 89.3% reported living with their parents, 65.2% had completed a high-school education, 40.7% reported having received a sext and 29.1% having sent a sext at least once. Mothers’ and fathers’ participation rates remained high over time. From T1 to T3, mothers’ participation rate was 96.9% and fathers’ was 96.7%. The attrition rate was principally due to two main reasons: the unavailability of the families to participate in the later data collections or their refusal to participate in that specific wave (see Table 1 for sample size across measurement time points).

2.2. Procedure

Letters describing the study were sent home to families, and parents were asked to return a signed form if they agreed to be contacted further. The study received ethical approval from the Institutional Review Board at Sapienza University of Rome. After obtaining parental informed consent and child assent, family triads completed the questionnaires in their homes or locations of their choosing. Mothers, fathers, and children completed interviews either orally or as written questionnaires.

Table 1
Correlations among study variables.

Variables	π	Mean (SD)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Child Gender	194	– (–)	–												
(2) SES	193	– (–)	0.022	–											
(3) T1 PP MR	193	– (–)	0.023	–0.052	–										
(4) T1 PP FR	150	– (–)	–0.038	–0.038	0.174*	–									
(5) T2 PP MR	192	– (–)	0.148*	–0.119	0.582**	0.068	–								
(6) T2 PP FR	148	– (–)	–0.025	–0.148	0.142	0.571**	0.185*	–							
(7) T3 PP MR	187	– (–)	0.001	–0.048	0.512**	0.146	0.558**	0.167*	–						
(8) T3 PP FR	145	– (–)	–0.123	0.034	0.169*	0.552**	0.112	0.613**	0.231**	–					
(9) T4 PFSBs Parcel 1	177	4.28 (1.27)	0.112	0.039	0.148	0.083	0.185*	0.112	0.130	0.020	–				
(10) T4 PFSBs Parcel 2	177	4.32 (1.40)	0.001	0.048	0.165*	0.133	0.157*	0.178*	0.175*	0.176*	0.829**	–			
(11) T4 PFSBs Parcel 3	177	4.71 (1.21)	0.002	0.036	0.204**	0.053	0.190*	0.149	0.154*	0.065	0.687**	0.715**	–		
(12) T5 Receiving Sexts	172	1.97 (0.94)	–0.162*	–0.095	–0.064	–0.055	–0.097	–0.090	–0.093	–0.124	–0.229**	–0.187*	–0.169*	–	
(13) T5 Sending Sexts	172	1.21 (0.30)	–0.009	–0.067	–0.089	–0.015	–0.061	–0.012	–0.061	–0.034	–0.253**	–0.180*	–0.218**	0.664**	–

Note. SD = Standard Deviation. Means and SDs are not reported for variables that were standardized to create composites, as those have a mean of 0 and SD of 1. Child gender was coded 0 = boys, 1 = girls. PP = Positive Parenting, PFSBs = Perceived Filial Self-Efficacy Beliefs, Parcel 1 = items 1, 10, 2 and 9, Parcel 2 = items 3, 8 and 4; Parcel 3 = items 5, 6 and 7. MR = Mother Report; FR = Father Report; CR = Child Report. T1, T2 and T3 correspond to children ages 13, 14 and 15; T4 and T5 correspond to children ages 18 and 19. ** = $p < 0.01$; * = $p < 0.05$.

Testing sessions lasted approximately 2 h. Families received modest financial compensation for their participation.

2.3. Measures

2.3.1. Covariates

Child gender (0 = boys, 1 = girls) and family SES were used as covariates. A composite score of SES when the youth participants were 13 years old was created through an average of the standardized scores of mothers' education, fathers' education, and the gross annual household income. The household income ranged from 1 to 10, with higher scores indicating higher family income.

2.3.2. Positive parenting (PP; mothers' and fathers' reports)

A measure of overall positive parenting practices was created by modelling a common latent trait variable that reflected the general, time-unspecific mean level of mothers' and fathers' reports of their positive parenting at T1, T2, and T3. The measure consisted of four items from the Oregon Youth Study rating how much time parents spend with the child (i.e., parental involvement) and how much they engage in positive parenting behaviors, such as noticing when their children do a good job (i.e., parental praise; Capaldi & Patterson, 1989). Three of the four items were measured on a 5-point response scale (1 = never; 2 = less than once a month; 3 = about once a month; 4 = about once a week; 5 = almost every day; "How much time do you spend with your son/-daughter doing something special that (s)he enjoys?"; "How often do you notice when your son/daughter is doing a good job and let him/her know?"; "How often do you show your son/daughter you like it when (s) he helps around the house?"). The remaining item was "How many days a week do you sit and talk with your son/daughter?", which was measured from 1 to 7. In line with Hancock and Mueller (2001) recommendations, we operationalized construct reliability by focusing on the reliability of the overall positive parenting latent construct as reflected by the multiple indicators (i.e., mothers' and fathers' reports). McDonald's Omega reliability coefficient for the latent variable of positive parenting was 0.70.

2.3.3. Perceived filial self-efficacy beliefs (PFSBs; child report)

Participants' perceived filial self-efficacy was measured at T4 by using 10 items assessing adolescents' beliefs in their capabilities to establish open communication with parents about personal problems, keep close emotional ties with parents, get the parents to understand their point of view, express positive feelings and manage negative emotional reactions toward them, and get them to see their side on contentious issues (Caprara et al., 2004, 2005). For each item, participants rated their beliefs on a 7-point response scale ranging from 1 = not at all well to 7 = very well. Examples of self-efficacy items are: "How well can you get your parents to understand your point of view on matters when it differs from theirs" and "How well can you get your parents to pay attention to your needs even when they are preoccupied with their own problems." The latent construct of PFSBs was constructed based on the parcel method (Russell et al., 1998). First, factor loadings based on all items were rank-ordered, and items were divided into parcels such that the average loadings were equalized across groups. The sums across items in each parcel were then used as indicators for the latent construct. This procedure creates factor indicators that more closely follow a normal distribution, it increases model parsimony and enhances model fit by minimizing idiosyncrasies of items (Dodge & Godwin, 2013). McDonald's Omegas were 0.78, 0.77, and 0.69 for parcel 1, parcel 2, and parcel 3, respectively.

2.3.4. Sexting (receiving and sending sexts; child report)

Participants' sexting behaviors were measured at T5 by using 2 items assessing the frequency of adolescents' receiving and sending sexts: "How often have you received sexts?" and "How often have you sent sexts?". Sexting behaviors were defined as "sending or receiving

sexually suggestive or provocative messages/photos/videos via mobile phone and/or Facebook or other internet social networking sites" and participants were asked to rate each sexting behavior on a 5-point response scale (1 = never; 2 = rarely or a few times; 3 = occasionally or 2–3 times a month; 4 = often or 2–3 times a week; 5 = frequently or daily).

2.4. Data analytic approach

Before conducting preliminary analyses, data were checked for univariate normality and outliers. Analysis of univariate normality revealed that all variables, except for sexting, were normally distributed. Sending sexts was positively skewed, which led us to transform it with the square root transformation (Tabachnick & Fidell, 2007). Preliminary analyses included descriptive statistics and bivariate correlations.

Subsequently, we followed a three-step approach to examine the overall consistency of mothers' and fathers' reports and their longitudinal relations to PFSBs and engagement in sexting behaviors. First, we tested the longitudinal measurement invariance of the four-item PP scale both for mothers and fathers to evaluate whether the same factor structure could be verified at different points in time. We estimated a configural invariance model in which the same pattern of free-factor loadings was specified across time. Next, we tested the metric (or weak) invariance by constraining the unstandardized factor loadings of each item to be equal over time. Finally, in the scalar invariance, the items were fixed to have the same origins (i.e., the intercepts) over time (e.g., Vandenberg & Lance, 2000).

Second, after establishing longitudinal measurement invariance, we estimated the overall consistency of mothers' and fathers' reports of their PP over time by using a latent variable modelling approach. In particular, we estimated a latent variable composed of six observed indicators (i.e., mothers' and fathers' reports at T1, T2, and T3) to capture the general, time-unspecific mean level of the construct under investigation. To identify our latent variable, we fixed the factor loading of the marker item to 1 and its intercept to 0 and we fixed the correlations between and within informants to 0 at each measurement occasion. Next, to ensure that mothers' and fathers' reports were contributing equally to the latent variable, we tested two increasingly restrictive measurement invariance assumptions (i.e., configural and metric; Vandenberg & Lance, 2000). Because our goal was to assess differences in prediction across groups (and not mean comparisons), weak invariance should be sufficient because it is considered the minimum level of measurement invariance to model direct associations among latent factors (Mulder & Hamaker, 2021). To detect measurement invariance (MI), we compared our models using the following indices: changes in Chi Square ($\Delta\chi^2$), Comparative-Fit-Index (ΔCFI) and Root Mean Square Error of Approximation (ΔRMSEA). MI is ascertained when model comparison shows at least one of the following values: $\Delta\chi^2$ with non-significant *p*-values, ΔCFI values lower than 0.01, and ΔRMSEA values lower than 0.015 (Chen, 2007; Cheung & Rensvold, 2002).

Third, based on recommendations by Holmbeck (1997), the hypothesized mediation model was tested through a three-step approach. First, a direct effects model (Model 1) was tested where the independent variable (PP) predicted the dependent variables (receiving and sending sexts). Second, a fully mediational model (Model 2) was tested with PFSBs mediating the relationships between the independent and dependent variables. Third, an integrated model (Model 3) with both direct and mediated effects was tested. If Model 2 fits best, complete mediation is supported. If Model 3 fits best, there is only partial mediation (Holmbeck, 1997). We used the Akaike Information Criterion (AIC) to select from our candidate set of models the one which best approximated our data set, with the best model being the one with the lowest AIC (Vrieze, 2012). Moreover, child gender and family SES were treated as covariates and their impact on all the study variables was examined.

Parameters were estimated using the Maximum Likelihood (ML)

estimator to handle missing data (Muthén & Muthén, 2017). We computed indirect associations using the bias-corrected bootstrapping method with 5000 replications and 95% Confidence Interval (CI). An indirect effect was considered significant when the 95% CI did not include zero (Byrne, 2006). Model fits were evaluated using the following criteria: a Root Mean Square Error of Approximation (RMSEA) of ≤ 0.06 ; a Comparative Fit Index (CFI) and a Tucker-Lewis Index (TLI) of ≥ 0.95 , and a standardized root mean squared residual (SRMR) of ≤ 0.05 (Hu & Bentler, 1999). In the case of non-optimal fit, modification indices were examined to find the most parsimonious changes to the model to achieve an acceptable fit. Pearson's r (for preliminary analyses) and path coefficients were considered as follows: small correlations by $0.10 < r < 0.30$, medium correlations by $0.30 < r < 0.50$, and large correlations by $r > 0.50$ (Cohen, 1988). All statistical tests were two-tailed, and a p value < 0.05 was considered statistically significant. Preliminary analyses were conducted using IBMS SPSS 25. All other analyses were conducted using Mplus 8.4 (Muthén & Muthén, 2017)

3. Results

3.1. Preliminary analysis

As reported in Table 1, mothers' and fathers' PP showed a small degree of concurrent (r s ranged from 0.174 to 0.231) and a high degree of overtime (r s ranged from 0.512 to 0.613) convergence. Correlations among parcels of PFSBs and sexting items were large (r s ranged from 0.687 to 0.829 and $r = 0.664$, respectively). Within waves, there were small correlations between mothers' and fathers' PP and PFSBs (r s ranged from 0.154 to 0.204) and between adolescents' PFSBs and sexting behaviors (r s ranged from 0.169 to 0.253).

3.2. Longitudinal measurement invariance

We established full longitudinal scalar invariance for both mothers' and fathers' reports of their PP across time (see Supplementary Materials Tables S2 and S3). Thus, for mothers' and fathers' reports of their PP, the patterns and factor loadings of the latent factors and the intercepts of the observed items were invariant across time.

3.3. Overall consistency of mothers' and fathers' reports of their PP

Results of the latent variable modelling analysis revealed that the estimation of mothers' and fathers' reports at T1, T2, and T3 did not converge normally, and the model did not show a satisfactory fit, $\chi^2(11) = 87.765, p < 0.001, CFI = 0.980, TLI = 0.908, RMSEA = 0.186$ (90% CI 0.151, 0.223), SRMR = 0.129. Inspection of modification indices revealed that the parameters of four covariances between error variables should be freed to improve the model fit (i.e., the covariance between T1, T2, and T3 of mothers' reports). The model was reanalyzed and yielded a good fit to the data (see Supplementary Materials Table S4). Results from the $\Delta\chi^2$ test comparing the unconstrained model to the constrained model in which the factor loadings of mothers' and fathers' reports were constrained to be equal across time were adequate and not worse than the fit of the unconstrained model ($\Delta\chi^2(2) = 0.540, p = 0.763$), suggesting that mothers' and fathers' reports of their PP across time cohered adequately to form the latent variable of positive parenting.

3.4. Mediation models

The three hypothesized models (a direct effects model: Model 1; a fully mediational model: Model 2; and an integrated model: Model 3) were compared. The fully mediational model (Model 2, Table 2) provided a lower AIC than the direct effects (see Supplementary Material Table S5) and integrated (see Supplementary Material Table S6) models and was therefore chosen as the final model. The standardized path

Table 2
Direct, indirect, and covariate effects in model 2 (fully mediational model).

Effects	Model 2		
	β	SE	95% CI
Direct Effects			
PP \rightarrow PFSBs	0.236	0.097	[0.032, 0.414]
Receiving Sexts			
<i>Direct Effects</i>			
PFSBs \rightarrow Receiving Sexts	-0.216	0.080	[-0.369, -0.056]
<i>Specific Indirect Effects</i>			
PP \rightarrow PFSBs \rightarrow Receiving Sexts	-0.051	0.030	[-0.131, -0.007]
Sending Sexts			
<i>Direct Effects</i>			
PFSBs \rightarrow Sending Sexts	-0.236	0.087	[-0.403, -0.060]
<i>Specific Indirect Effects</i>			
PP \rightarrow PFSBs \rightarrow Sending Sexts	-0.056	0.033	[-0.141, -0.008]
Covariate Effects			
Child Gender \rightarrow PP	-0.071	0.089	[-0.246, 0.099]
Child Gender \rightarrow PFSBs	0.078	0.083	[-0.090, 0.240]
Child Gender \rightarrow Receiving Sexts	-0.156	0.077	[-0.308, -0.003]
Child Gender \rightarrow Sending Sexts	0.003	0.079	[-0.150, 0.160]
SES \rightarrow PP	-0.085	0.093	[-0.258, 0.106]
SES \rightarrow PFSBs	0.063	0.081	[-0.106, 0.215]
SES \rightarrow Receiving Sexts	-0.097	0.073	[-0.242, 0.045]
SES \rightarrow Sending Sexts	-0.062	0.080	[-0.217, 0.094]
Correlation			
Receiving Sexts \leftrightarrow Sending Sexts	0.650	0.055	[0.530, 0.745]
Model fit statistics			
χ^2	68.138		
df	57		
RMSEA	0.032 [0.000, 0.057]		
CFI	0.985		
TLI	0.979		
AIC	3607.723		

Note. Significant effects are reported in bold. The following standardized betas (β), their standard errors (SE) with their 95% confidence intervals (CI) are reported. The following fit indexes are reported: χ^2 = Chi Square; df = degrees of freedom; RMSEA = Root-Mean-Square-Error-of-Approximation with 90% confidence intervals (90% CI); CFI=Comparative-Fit-Index; TLI = Tucker-Lewis-Index; AIC = Akaike Information Criterion. Child Gender was coded 0 = boys, 1 = girls. SES = Socio-Economic Status. PP = Positive Parenting. PFSBs = Perceived Filial Self-Efficacy Beliefs.

coefficients of the final model are presented in Fig. 1. Direct and indirect effects along with their 95% bias-corrected CIs are displayed in Table 2.

In regards to direct effects, controlling for child gender and SES, the mediation model showed a positive and significant longitudinal direct association of PP (T1, T2, and T3) on PFSBs (T4), and a negative longitudinal direct association of PFSBs (T4) on both receiving and sending sexts (T5).

In regards to indirect effects, the mediational model showed that higher PP (T1, T2, and T3) was longitudinally associated with higher levels of PFSBs (T4) which, in turn, were significantly associated with lower engagement in sexting behaviors (both receiving and sending sexts; T5). These mediated effects (higher PP \rightarrow higher PFSBs \rightarrow lower Receiving Sexts; higher PP \rightarrow higher PFSBs \rightarrow lower Sending Sexts) were statistically significant as the 95% CI did not include zero. In other words, the relation between mother- and father-reported PP and child-reported engagement in sexting behaviors was fully mediated by child-reported PFSBs. Lastly, regarding the effects of covariates, only child gender contributed significantly and negatively to receiving sexts, suggesting that males reported receiving more sexts than females. Overall, the variance accounted for by the final model was 6% for the latent variable of PFSBs, 9% for receiving sexts, and 6% for sending

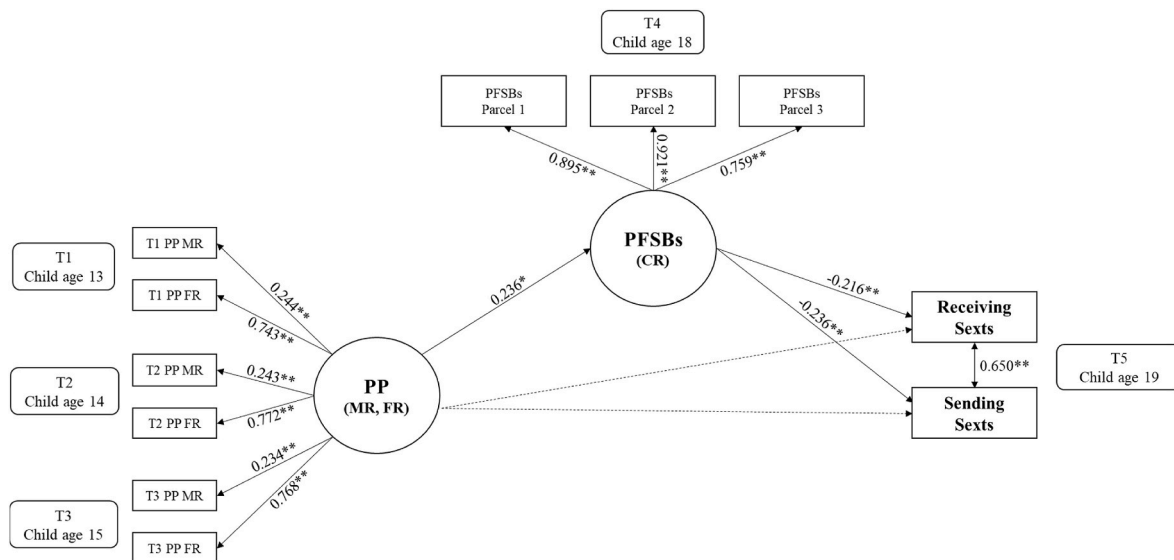


Fig. 1. Final mediation model 2 (fully mediational model).

Note. Standardized parameter estimates are reported. Dotted lines indicate nonsignificant parameters. Circles represent latent variables; rectangles represent observed variables. PP = Positive Parenting. PFSBs = Perceived Filial Self-Efficacy Beliefs; Parcel 1 = items 1, 10, 2 and 9; Parcel 2 = items 3, 8 and 4; Parcel 3 = items 5, 6 and 7. MR = Mother Report; FR = Father Report; CR = Child Report. Covariates (child gender and SES) were not depicted for sake of simplicity. Dashed arrows indicate pathways set at 0. Full arrows indicate significant paths. ** = $p < 0.01$; * = $p < 0.05$

sexts.

4. Discussion

The present study was designed to examine the longitudinal relations between positive parenting, adolescents' filial self-efficacy beliefs, and their engagement in sexting behaviors in a sample of Italian emerging adults, their mothers, and fathers followed longitudinally across five waves over seven years. In particular, we tested these relations by examining whether filial self-efficacy beliefs mediated the link between positive parenting and later engagement in receiving and sending sexts. In a departure from many single-reporter designs and cross-sectional studies, we included mothers' and fathers' reports of their positive parenting (at children ages 13, 14, and 15) and child perceptions of their filial self-efficacy beliefs (at child age 18) and engagement in sexting behaviors (at child age 19). In doing so, we found that higher levels of positive parenting were longitudinally associated with higher levels of perceived filial self-efficacy beliefs, which, in turn, were associated with less engagement in receiving and sending sexts. Adolescents' perceived filial self-efficacy fully mediated the effects of positive parenting on sexting, revealing self-efficacy beliefs as central components to the benefits conveyed to teens in reducing their sexting behaviors.

Supporting Hypothesis 1, we found an overall consistency of mothers' and fathers' reports of their positive parenting over time. These results suggested that parents who used positive parenting behaviors when their child was 13 were likely to use positive parenting behaviors when they were 14 and 15 years old. This result is in line with previous studies suggesting that stimulating and sensitive parental behaviors demonstrate stability across child development and that there is less chance that parents will change the older the children become (Landry et al., 1994)

In partial support of Hypothesis 2, we found that, across adolescence, positive parenting was directly and longitudinally related to higher levels of perceived filial self-efficacy, but it was not predictive of youths' sending and receiving sexts. As the primary social system, the family exerts an ongoing influence on child development (Caprara et al., 2004). If adolescents are raised in a context steadily characterized by parents' positive verbal rewards and ongoing involvement, they are also more likely to develop a greater sense of filial self-efficacy and personal

agency within the family context. However, as suggested by our results, being raised in a context steadily characterized by parents' positive parenting seems not to be a direct protective factor for adolescents' subsequent engagement in sexting behaviors. Although previous cross-sectional studies have found that positive parenting practices (e.g., better parent-child communication, parental knowledge) directly predict lower engagement in sexting behaviors among adolescents (Bianchi et al., 2019; Confalonieri et al., 2020), our results suggested that there may be underlying mechanisms explaining these associations, at least across developmental transitions. Hence, the non-significant direct effect fits the broader ongoing discussion about the need to employ more longitudinal approaches to accurately understand how parents impact their children's sexting behaviors throughout adolescence and the transition to emerging adulthood.

In support of Hypothesis 3, the current findings identified perceived adolescent filial self-efficacy as a significant mediator in the relation between positive parenting and later engagement in sexting behaviors. Thus, both personal factors (i.e., filial self-efficacy beliefs) and the nature of family relationships (i.e., positive parenting) were related to adolescents' sexting. According to SCT, adolescents depend on their environment and the people around them to develop a sense of self-efficacy (Bandura, 1997). Hence, when parents (who are the key socializing agents in their lives) employ positive parenting practices, such as spending time with their child doing something special, adolescents' sense of efficacy may be enhanced, making adolescents more likely to believe in their own agency and competency and so to self-regulate and avoid behaviors that have potentially large negative consequences. The primacy of adolescents' sense of personal efficacy along with a supportive family environment has also been demonstrated in other research concerning other forms of perceived self-efficacy and different developmental outcomes (e.g., Bradley & Corwyn, 2001; Caprara, Regalia, & Bandura, 2002; Weiser & Riggio, 2010). Although traditional views emphasize the importance of separation from the family as a goal of adolescent development (see Baumrind, 1991), other evidence suggests that positive parent-child interactions serve as an important function for adolescents by providing a sense of stability and connectedness from which youths can explore the world and expand their own development (Ralph, 2018). Especially in sociocultural contexts where adolescents' stays at their parents' houses tend to be prolonged (such as

in Italy), relationships with parents remain significant. Thus, when adolescents perceive that they are capable of establishing and maintaining good relationships with their parents while voicing their own opinions and negotiating their freedom, they can progress in their development through behaviors that foster their psychosocial adjustment and prevent engagement in risky behaviors (Bandura, 1997; Caprara et al., 2005; Regalia et al., 2001).

4.1. Strengths and limitations

This study has numerous strengths including a longitudinal design, the use of multiple reporters, and the analysis of different forms of involvement in sexting. Hence, we relied on children's reports of both filial self-efficacy beliefs and sexting behaviors (i.e., sending and receiving sexts), and mothers' and fathers' reports of their positive parenting to investigate whether and how both environmental (i.e., positive parenting) and individual (i.e., filial self-efficacy) factors may shape sexting behaviors across child transition from adolescence to emerging adulthood (approximately from 13 to 19 years old).

However, some limitations should be kept in mind. First and foremost, given the relatively small proportion of variance in filial self-efficacy and sexting behaviors accounted for by the model, we cannot rule out that unmeasured third variables might explain the current findings. For example, the engagement in sexting behaviors may have other specific antecedents, in which youths' differences in terms of personality and temperament characteristics can be central (Klettke et al., 2014). Future research should address the plausible individual differences and parental dimensions that might be found when studying the long-term predictors of sexting behaviors.

Another limitation pertains to the generalizability of findings from Italian young adults to other cultural contexts. Because the perceived filial efficacy scale used in the present study has been validated only with Italian adolescents, it is recommended that future studies provide cross-cultural validation data. Multi-national and cross-cultural assessment of associations between sexting and self-efficacy beliefs in the domain of family functioning is an important task for future research, particularly due to the growing popularity of sexting (Mori et al., 2020).

Furthermore, although filial self-efficacy beliefs and sexting behaviors were assessed during a time in which youths are expected to gain an increasing agentic role within the family context (e.g., Caprara et al., 2005), and to be more vulnerable than other age groups to engage in sexting behaviors (e.g., Hudson & Petro, 2015), filial self-efficacy and sexting data were not available at an earlier age than 18 (T4) and 19 (T5) years. Future studies could benefit from controlling for prior levels of the predicted constructs to increase the validity of conclusions about prospective effects.

Finally, the present study focused on only one component of children's microsystem (i.e., parents) and only on two forms of sexting behaviors (i.e., receiving and sending sexts). Other systems (e.g., romantic and peer relationship; Hunter et al., 2021) and other forms of sexting (e.g., consensual, non-consensual and under-pressure sexting; Morelli et al., 2021) should be investigated in future research.

4.2. Conclusions and implications

This study shed light on the antecedents of youths' sexting behaviors by examining whether both environmental (e.g., parents) and individual (self-efficacy beliefs) factors may protect against the engagement in, and potential negative consequences of, receiving and sending sexts by using a longitudinal sample of mothers, fathers and their children followed across five waves over seven years.

Overall, our findings provided useful insights in terms of both theoretical and practical implications. From a theoretical perspective, our results suggested that, in the passage from adolescence to emerging adulthood, adolescents' confidence in their capability to manage their relationships with their parents played a protective role against the

engagement in sexting behaviors, a finding that confirms that managing relationships with parents well strengthen and improve adolescents' psychological resources and future adjustment (Bandura, 2006a; Caprara et al., 2005). One should notice that, especially in cultures where the emerging adulthood period is characterized by prolonged co-residence with parents, such as in Italy, the family has a long-lasting role in the development of youths' positive adaptation. When adolescents are raised in families characterized by positive parent-child interactions, adolescents are more likely to believe in their capability to establish and maintain good relationships with their parents while voicing their own opinions and negotiating their freedom and refraining from engaging in online risky behaviors, such as sexting.

From a practical perspective, our results also evidenced the importance of implementing interventions that engage parents as the agents of change for their youngsters' behaviors. For instance, parent training programs that focus on increasing positive parenting practices (e.g., the Parent Management Training-Oregon Model, PMTO; Forgatch & Patterson, 2010) may help parents learn how to create a warm and supportive family environment that is the base for changes in how children will develop their increasing agentic role and behave as they grow old (Patterson, 2002, 2005). Moreover, especially during a period characterized by increasing autonomy and detachment from family (i.e., the transition from adolescence to emerging adulthood), interventions designed to increase filial self-efficacy beliefs may help adolescents to enhance their own sense of agency and competency, ultimately leading them to self-regulate their sexting behaviors.

Funding

This research has been funded by the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development grant RO1-HD054805. Jennifer E. Lansford acquired the funding and administered the project.

CRedit authorship contribution statement

Chiara Remondi: Writing – original draft, Investigation, Formal analysis, Data curation, Conceptualization. **Maria Gerbino:** Writing – original draft, Formal analysis, Data curation, Conceptualization. **Antonio Zuffianò:** Formal analysis, Data curation, Conceptualization. **Roberto Baiocco:** Writing – review & editing, Conceptualization. **Flavia Cirimele:** Investigation. **Eriona Thartori:** Investigation. **Laura Di Giunta:** Investigation. **Carolina Lunetti:** Investigation. **Ainzara Favini:** Investigation. **Dario Bacchini:** Investigation. **Camillo Regalia:** Writing – review & editing, Conceptualization. **Jennifer E. Lansford:** Writing – review & editing, Funding acquisition. **Concetta Pastorelli:** Writing – review & editing, Writing – original draft, Supervision, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.chb.2024.108320>.

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