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Physically distant, virtually close: Adolescents' sexting behaviors during a strict lockdown period of the COVID-19 pandemic

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ARTICLE INFO

Keywords:

sexting
Adolescents
COVID-19
Lockdown
Uses and gratifications

ABSTRACT

This study contextualizes Belgian adolescents' (12–18 years old) sexting behaviors between romantic and non-romantic partners during a strict lockdown period of the COVID-19 pandemic. An online survey among 543 Belgian respondents ($M_{age} = 15.29$, 68% girls) showed that 40.9% of the adolescents engaged in at least one type of sexting (i.e., type one = *textual*, type two = *visual content with underwear/swimwear*, type three = *visual depiction of private parts*, type four = *visual depiction of sexual acts*). Arousal needs were the most common reasons to sext ($M = 3.33$, $SD = 1.89$). Generalized ordered logit analyses show that higher arousal needs were linked to higher frequencies of the first three sexting types. Relational affirmation needs were related to the engagement in sexting type two, whereas partner pressure was related to sexting type three and four. Regarding the latter, a significant link was also found with stress regulation. Conditional relations emerged according to adolescents' sex, developmental status, and relationship status. The current study's findings not only help to inform practitioners in terms of behavioral advice for future pandemics or periods after social isolation, but can also offer explanations for (changes in) adolescents' sexting behaviors after the pandemic and the possible dual nature of its effects.

The emergence of COVID-19, which is a disease caused by a novel strain of the coronavirus (Velavan & Meyer, 2020), has resulted in the widespread implementation of (strict) lockdown periods (Miles et al., 2020). In Belgium, such lockdown periods included that individuals were unable to meet people inside besides the members of their household. Outside, strict social distancing measures were active with individuals needing to keep a distance of 1.5 m from each other and wearing a surgical mask. Also, schools were closed and classes were taught online. Some classes were given synchronously (e.g., teaching in real time), while other classes were given asynchronously (e.g., learning at one's own pace via online assignments). Stores (besides super markets and pharmacies) were closed and non-essential transportations were prohibited.

Scholars have recently argued that adolescents turned to mediated communication (i.e., communication via the uses of technology) in order to cope with strict lockdown periods (e.g., Ellis et al., 2020). Particularly, they highlight the relevance of sexting behaviors during exceptional times of social distancing (e.g., Lehmillier et al., 2020). Sexting can be defined as "the sending of self-made sexually explicit messages, pictures or videos through the computer or mobile phone"

(Van Ouytsel et al., p. 1, 2019). Given the unique affordances of this online behavior (Fox & Potocki, 2014, pp. 95–122), sexting may allow adolescents to gratify (developmental) needs while being socially distant. However, to this date, no existing studies have explored these presumptions.

Therefore, the current study aimed to fill this gap in the literature by addressing why Belgian adolescents engaged in such online behaviors during the pandemic. The Uses and Gratifications theory (Katz et al., 1973) may be especially relevant to frame this research goal as it postulates that media users attempt to satisfy different social and psychosocial needs and, based on these varied needs, they tailor their personal media diet. Although the theory was originally developed for explaining television viewing behaviors, existing studies have already employed this theory to contextualize adults' sexting behaviors and identified a series of motivators, such as sexual arousal (Hudson & Marshall, 2018). Research is scarce in terms of adolescents' gratifications sought for sexting (Bianchi et al., 2016), and non-existing during the exceptional context of a strict lockdown period. Such insights may help to frame the impact of the crisis as some gratifications sought are considered part of a healthy sexuality development (e.g., sexual arousal), whereas others can

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be considered rather harmful (e.g., partner pressure) (Bianchi et al., 2018). The study was done in Belgium as this country experienced a strict lockdown period from the 18th of March 2020 to the middle of May 2020.

1. Adolescents' (developmental) needs during the COVID-19 pandemic

Adolescence is characterized by hormonal and biological changes which parallel with psychological and social transformations (Lerner et al., 2010). One of these significant hormonal changes constitutes the elevation of sexual arousal levels, which marks adolescents' sexuality development (Fortenberry, 2013). Adolescents respond to feelings of sexual arousal mostly in a private sphere (e.g., pleasuring oneself sexually), but sometimes also through in-person (physical) contact (e.g., petting behavior with one's crush) (Best & Fortenberry, 2013). These personal interactions are sometimes part of the establishment of a (first) romantic relationship (Furman & Rose, 2015). Such relationships are highly valuable for adolescents' sexual and social development. They create a context in which emerging sexual feelings and behaviors can be explored, but also form building blocks for the gradual development of social skills and the discovery of emotional responsibilities (Furman & Shaffer, 2015).

Besides romantic connections, peer interactions also play a significant role during adolescence (Lerner et al., 2010). In particular, adolescents are gradually becoming more sensitive for peer acceptance and approval (Smetana et al., 2006). Peer culture guides adolescents' creation of their (social) self-identity and, therefore, fosters adolescents' development into independent adults (Upreti, 2017). Furthermore, peer relationships also shape adolescents' feelings and attitudes toward their changing bodies (i.e., body image) (e.g., Dohnt & Tiggemann, 2006). Specifically, adolescents often compare themselves with peers who match their own biological maturity and share body image-related concerns with them (Jones & Crawford, 2006).

The interpersonal context thus plays a significant role in adolescents' development (Furman & Rose, 2015). However, with the recent emergence of the COVID-19 pandemic, the exploration of developmental tasks in this context may have been highly disrupted (Fegert et al., 2020). Particularly, policies implemented to reduce further spreading of the coronavirus (i.e., strict social distancing) have changed the social environment in which adolescents respond to developmental changes (Orben et al., 2020). More precisely in Belgium, schools were closed and individuals were unable to meet other people outside of their household. Hence, the literature points to the intensification and/or creation of several (developmental) needs which are believed to be especially relevant in the context of adolescence.

With the implementation of social distancing guidelines, adolescents were unable to discover and respond to emerging feelings of sexual arousal through intimate physical contact (Döring, 2020). Simultaneously, recent reports show that adolescents experienced boredom and loneliness because of the social distancing during a strict lockdown period (Common Sense Media, 2020). These two moods, in turn, have been reported in existing research to increase sexual arousal (de Oliveira & Carvalho, 2020). As such, scholars suggest that individuals may have experienced more articulated needs to gratify sexual arousal during the period of social deprivation (Döring, 2020).

Further, the social distancing measures also challenged adolescents to initiate and/or maintain (casual) romantic relationships as face-to-face interactions were limited. Existing studies on long-distance relationships point to the specific needs of physical intimacy and nonverbal contact which are lacking during physical distancing (e.g., Dainton & Aylor, 2001). Also, the absence of intimacy and nonverbal cues may have triggered worries and doubts about romantic relationships (i.e., relational anxiety) (Pistole et al., 2010). Individuals who experience such relational anxiety typically show increased needs for affirmation of their partner or a person who is not (yet) their partner

(Chorney & Morris, 2008). As such, adolescents who are only just discovering their first romantic relationships will likely have been challenged more extensively during a strict lockdown period.

In addition, because of reduced face-to-face interactions, adolescents were unable to connect in-person with peers. A recent review on the effects of social deprivation for adolescents (Orben et al., 2020) suggests that they were likely to have experienced a more articulated need for peer approval and social rewards. Such peer approval is needed to further develop their identities (Upreti, 2017).

The absence of physical interactions with peers may also have affected adolescents' construction of their body image. Particularly, adolescents were unable to engage in appearance talk with their peers in a face-to-face environment, which is considered a significant part of adolescents' body image construction (Jones & Crawford, 2006). Simultaneously, as schools, recreation centers, sports teams, and local gyms were closed during a strict lockdown period, adolescents reported being unable to maintain regular physical activities (e.g., Ruz-Roso et al., 2020). Limited physical activities may have negatively affected adolescents' body image as existing studies point to the beneficial implications of exercise for one's body-related thoughts and attitudes (Hausenblas & Fallon, 2006). Also, recent reports show that adolescents turned more to social networking sites during a strict lockdown period, which likely increased their exposure to beauty ideals (i.e., influencers) and stimulated appearance dissatisfaction (Vall-Roqué et al., 2021). Based on these insights and speculations, adolescents were possibly more challenged to accept their changing bodies during a strict lockdown period.

Lastly, as previously addressed, reports also point to more intense feelings of loneliness and boredom among adolescents during social isolation (Common Sense Media, 2020). Scholars have also demonstrated heightened feelings of stress which were commonly induced by insecurities about the COVID-19 pandemic (McElroy et al., 2020). Adolescents may have sought out ways to cope with and regulate these more intense feelings. For example, recent studies point to a higher social media use among adolescents to regulate and cope with these emotions (Cauberghe et al., 2021).

In sum, developmental literature (e.g., Lerner et al., 2010) and recent reports on the impact of the COVID-19 pandemic on individuals' daily lives (e.g., Orben et al., 2020) point to the prominence of several (developmental) needs among adolescents. These needs include (1) sexual arousal, (2) relationship maintenance (i.e., intimacy and relational affirmation), (3) peer approval, (4) body acceptance, and (5) emotional regulation (i.e., loneliness, boredom and stress).

2. Sexting among adolescents

Mediated communication can provide important means by which adolescents respond to such (developmental) needs. One type of mediated communication that is particularly interesting in a lockdown period, is sexting. The meta-analysis of Madigan et al. (2018) point to a worldwide sizeable minority of adolescents engaging in this online sexual behavior in a normal context (i.e., 14.8% for sending sexts and 27.4% for receiving sexts). Within the unique developmental context of adolescence, sexting can be a significant tool to respond to different developmental needs (Van Ouytsel et al., 2017). For some adolescents, sexting can be part of their sexual repertoire to explore their emerging sexual feelings, discover their sexual preferences, and establish their sexual identity (Walrave et al., 2014).

Previous sexting research has operationalized sexting as an inclusive category summing up different sexting forms (i.e., textual content, visual content in which one only wears underwear, in which one's private parts can be seen, and in which one is doing something sexual) in a single construct and has, as such, assumed that different sexting types are equal in their effects (e.g., Burén & Lunde, 2018). Some literature suggests that different sexting types cannot be considered as one behavior (Barrense-Dias et al., 2017). More precisely, a stepwise engagement in different

sexting behaviors may be present and may even coincide with the typical trajectory of adolescents' exploration of different offline sexual behaviors. Specifically, adolescents do not immediately engage in sexual intercourse but rather take their time by exploring different sexual behaviors first (e.g., petting behaviors, kissing, foreplay) (Fortenberry, 2013). Similarly, adolescents may prefer to first experiment with less explicit forms of sexting before sending more explicit messages. Note that some adolescents will never participate in sexting, and most adolescents do not engage in the most explicit type of sexting (Madigan et al., 2018).

Regardless of their type, all sexting behaviors offer specific advantages for mitigating developmental disruptions during physical distancing. Key affordances of sexting (i.e., accessibility and portability) (Fox & Potocki, 2014, pp. 95–122) allow adolescents to temporarily replace face-to-face interactions to gratify their (developmental) needs intensified during a strict lockdown. However, to this date, no existing studies have explored and contextualized adolescents' sexting behaviors during a strict lockdown period.

3. Sexting during the COVID-19 and gratifications sought

In order to contextualize adolescents' sexting behaviors during a strict lockdown period, the current study builds on the theoretical framework of Uses and Gratifications Theory (i.e., U&G) (Katz et al., 1973). U&G guides our understanding of how and why individuals seek specific media to fulfill certain needs. Within this theoretical framework, Katz et al. (1973) refer to gratifications sought as motivations for particular media uses based on the expectations of the outcomes. Thus, media users attempt to satisfy certain social and psychological needs and these needs guide their decision to use a certain type of media.

U&G theory has already been applied to sexting to describe the motivations and practices of sexting in young adults (Hudson & Marshall, 2018). Interestingly, these studies always focus on one particular gratification sought (for an exception, see Bianchi et al., 2019). For instance, some studies only focus on gratifications related to relationship maintenance (e.g., Reed et al., 2020). Hence, it is necessary that scholars gain a more comprehensive understanding of sexting in which a multitude of gratifications sought are addressed. Such more comprehensive insights are especially relevant during social isolation as adolescents' developmental context has been disrupted and, therefore, different gratifications sought may be more articulated (Matias et al., 2020; Orben et al., 2020). From existing qualitative and quantitative sexting literature, different gratifications sought have emerged which reflect adolescents' needs during a strict lockdown period. Some gratifications are considered part of a healthy sexuality development (e.g., sexual arousal), whereas others can be considered harmful (e.g., partner pressure) (Bianchi et al., 2018).

First, the literature points to sexual arousal needs as significant antecedents of sexting behaviors (Cooper et al., 2016). Particularly, the quantitative study of Bianchi et al. (2019) recently demonstrated that sexual motivations were adolescents' most widely reported reasons to sext. Similar motivations may have been present during a strict lockdown period as sexual arousal was presumed to be intensified during social isolation (Döring, 2020).

Further, a great body of existing research highlights that adolescents predominantly engage in sexting in order to flirt or gain romantic attention, but also to preserve romantic relationship quality (Cooper et al., 2016). Regarding the latter, studies point that, within a long-distance relationship, sexting can take place as a means of sustaining a level of intimate connection (Van Ouytsel et al., 2017). As such, within the exceptional context of a strict lockdown period, similar antecedents may be present as intimacy needs presumably marked adolescents' experiences. Relatedly, findings in past research have indicated that adults respond to relational anxiety by engaging in sexting behavior (e.g., Currin, Golden, & Hubach, 2020). Particularly, Weisskirch et al. (2017) argue that individuals engage in sexting out of fear of negative

evaluation by their partner and, therefore, seek affirmation for their value as a partner. Studies examining such processes among adolescents are lacking, yet are likely to be similar in conclusions, especially during a lockdown.

Partner pressure also plays a role sometimes (Cooper et al., 2016). Adolescents sometimes send sexually explicit texts or images because they believe that this will help them to maintain their relationship or, even, to initiate a new relationship (Walrave et al., 2014). Such beliefs are typically forced on someone by a partner who pressures the sender to share sexting content (Ringrose et al., 2013). As the exertion of pressure in a sexual context can be related to perpetrators' stress levels (Hoffmann & Verona, 2018), the lockdown period may have created a context in which exerting pressure was presumably more stimulated. As such, adolescents may have been the victim of sexting pressure and responded to such pressure in order to maintain their intimate relationship during a strict lockdown period.

Existing studies further show that adolescents' expectancies regarding the extent to which peers approve sexting predict their own engagement in sexting (e.g., VandenAbeele et al., 2014). Adolescents typically engage in certain behaviors which are normative within the peer group and expected to be rewarded by peers (e.g., popularity) (MacCallum, 2011). Given the absence of in-person peer interactions during a strict lockdown period, it may be possible that adolescents' turned to sexting in order to gain peer approval.

Another widely reported motivation for sexting behavior includes body image reinforcement (e.g., Currin & Hubach, 2019). More specifically, findings of the study of Bianchi et al. (2019) imply that adolescents turn to sexting in order to receive positive feedback about one's body. As it was previously suggested that adolescents may have experienced heightened needs for body acceptance during a strict lockdown period, it may be possible that adolescents turned to sexting for similar reasons.

Lastly, previous research demonstrated that sexting affords a means of regulating or even reducing deteriorated moods and, therefore, gratifying emotional regulation needs (e.g., Associate Press-MTV, 2009). With recent reports pointing to elevated feelings of boredom, loneliness and stress, it may have been possible that adolescents engaged in sexting behaviors in order to reduce such negative feelings.

By examining these particular motivations for sexting during a strict lockdown period, a more in-depth understanding can be reached of adolescents' experiences during the COVID-19 pandemic. Therefore, the current study first sought to explore which gratifications sought of adolescents' engagement in sexting were the most prevalent during a strict lockdown period of the COVID-19 pandemic (RQ1).

Such gratifications sought may differ according to the adolescents' engagement in the different sexting forms ranging from least (i.e., sending a text message about sex) to the most explicit (i.e., sending content in which one is doing something sexual). Some motivations may potentially encourage the uses of less explicit forms of sexting, while others may be driven by the most explicit ones. Yet, no research currently exists to support this reasoning, though this knowledge may help us to understand the nature of adolescents' sexting behaviors. As such, the current study also aimed to explore which gratifications sought were antecedents of adolescents' engagement in different sexting types during a strict lockdown period (RQ2).

4. Individual differences

U&G theory further points to the heterogeneous nature of different gratifications sought (Katz et al., 1973). Existing research points to individual differences in adolescents' sexting behaviors regarding adolescents' developmental status, sex and relationships status (Cooper et al., 2016). With regards to the adolescent's developmental status, previous research highlights the increasing prevalence of sexting behaviors when adolescents mature (e.g., Mitchell et al., 2012). Early adolescents mainly turn to sexting to explore emerging sexual feelings

(e.g., Campbell & Park, 2013), whereas late adolescents are additionally stimulated by the need to maintain or initiate romantic relationships and/or sexual activities (Bianchi et al., 2019). Also, late adolescents use sexting more frequently in order to seek body image reinforcement (Bianchi et al., 2019).

Further, a growing body of literature has identified the gendered nature of sexting behavior (e.g., Lippman & Campbell, 2014). In particular, girls' experiences with sexting shed light on underlying injunctive norms regarding girls' sexuality. Girls indicate that they often engage in sexting out of the fear of losing their partner or their sexting partner who is not their boyfriend/girlfriend and, consequently, they often felt implicitly pressured to sext (Lippman & Campbell, 2014). The study of Ringrose et al. (2013) demonstrated that girls had the perception that they have to be sexually attractive in order to be valued by a sexting partner. But, at the same time, they were also aware of possible reputational damage when engaging in sexting (Ringrose et al., 2013). Boys, on the other hand, often received praise and peer approval for sexting as it is perceived as a display of masculinity (Ringrose et al., 2013). Therefore, boys are more motivated to sext as a response to peer approval needs (VandenAbeeel et al., 2014).

Lastly, sexting occurs among both adolescents in a relationship and single adolescents, yet for different reasons (Cooper et al., 2016). Adolescents who are in a relationship have reported to use sexting to improve their relationship quality when they are physically separated (e.g., Van Ouytsel et al., 2020). Single adolescents, on the other hand, commonly sext to attract potential romantic partners and initiate romantic relationships (Henderson, 2011). Within the context of a strict lockdown in the COVID-19 pandemic, it is likely that similar individual differences in motivators are present. Therefore, the current study aimed to explore if gratifications sought for the engagement in sexting differed based on the adolescents' developmental status, sex and relationship status (RQ3). Assuming that these differences occur, it is likely that their relations with different sexting types will also vary in terms of adolescents' developmental status, sex and relationship status. Therefore, the current study also sought to address whether relations between the different gratifications sought and the different sexting types differed based on adolescents' developmental status, sex and relationship status (RQ4).

5. Methods

5.1. Sample and procedure

A sample of adolescents (12–18 years old) was recruited from 16 different schools in Belgium through random sampling. A strict lockdown period was organized starting from the 18th of March until the 18th of May. During this strict lockdown period, schools were closed, non-essential transportation and meeting with others outside one's household was prohibited. The data for this cross-sectional study was collected in June 2, 2020.¹ During this month, an 'exit strategy' was established in Belgium. This strategy consisted of the gradual facilitation of measures previously established to reduce spreading of the coronavirus (i.e., schools were open again). General rules regarding physical distancing were still operative (i.e., keeping a distance of 1.5 m).

Respondents who participated at W1 in the Positive Body and Sex Project² at school were contacted by the school principals via e-mail to fill in an online survey at home. In total, 1152 adolescents were contacted. Active and passive parental consent was obtained from parents whose adolescents were respectively younger than 16 years old and

¹ The study was part of a larger survey project 'the Positive Body and Sex Project'. Data for this project was also collected at other times, in January 2020 (at school via paper-and-pencil surveys) and October 2020 (online at home). Note that only in June 2020, information about sexting was collected. For more information regarding this project, please contact the first author.

older than 16 years old. The respondents were assured that the survey would be processed confidentially and anonymously and assent was obtained from respondents at the beginning of the online survey. Respondents were able to contact the first author via e-mail or the author's phone number if they had any questions. Respondents were rewarded with coupons worth 5 euros after completion of the online survey. The respondents generally completed the online survey within 50 min. Approval for this study was obtained by the ethic commission of [blinded for review].

Of the 1152 respondents contacted, 567 filled in the online survey completely (drop-out rate = 49.2%). This large drop-out rate can be explained by the change in data collection methods due to the restrictions during the COVID-19 pandemic. Particularly, in January adolescents were recruited in classes, at school. In June, on the other hand, we were unable to visit schools to collect the data and respondents filled in the surveys at home. As such, we had less control over the participation of the respondents. Respondents' answers were omitted if they reported an age below 12 or above 18 ($N = 24$). After cleaning the data, the analytical sample consisted of 543 respondents ($M_{age} = 15.29$, $SD = 1.55$) with 68% girls. Of the analytical sample, 87.1% was heterosexual, 6.6% was non-heterosexual and 6.3% did not know yet which sexual orientation they had. Based on the Belgian secondary school system division, 55.4% followed the first education level in which they were being prepared for college education, 38.3% followed the middle education level in which they were being taught primarily technical skills, and 5.7% followed the third education level leading to professions (e.g., baker), 0.6% did not know which education level they were in.

6. Measures

6.1. Socio-demographic variables

Age, sex (0 = boy, 1 = girl), education level, and sexual orientation (1 = heterosexual, 2 = homosexual, 3 = bisexual, 4 = I do not know yet) were questioned. The latter was recoded into a dummy variable with "0 = heterosexual" ($N = 473$) and "1 = non-heterosexual" ($N = 36$). Respondents who answered "I do not know yet" ($N = 34$) were coded as having a missing value.

6.2. Developmental status

Respondents' developmental statuses were measured by using three items from the Pubertal Development Scale (Petersen et al., 1988). In particular, respondents described the status of their body growth and body hair growth. Girls described the status of their breast growth, while boys were asked about their vocal changes. Respondents could answer these items with (1) *not yet started*, (2) *has barely started*, (3) *is still going on*, (4) *seems complete*, or (5) *I do not know*. Given the particular sensitivity regarding such questions among adolescents, respondents could also not answer this question and were coded as having a missing value ($N = 59$). The item regarding body growth was deleted as this item had a low factor loading among boys (= 0.32) and girls (= 0.39). The two remaining items (i.e., for boys vocal changes and body hair growth; for girls breast growth and body hair growth) correlated significantly, $r_{boys} = 0.48$, $p < .01$, $r_{girls} = 0.17$, $p < .01$. Mean scores were used, with higher scores indicating a higher developmental status ($M_{boys} = 3.19$, $SD_{boys} = 0.63$, $M_{girls} = 3.31$, $SD_{girls} = 0.47$). The variable developmental status was created which included both boys' and girls' scores. This variable was recoded into a dummy variable with 0 = "adolescents in an early developmental stage" ($N = 230$), which included scores from 1 to 3, and 1 = "adolescents in an advanced developmental stage" ($N = 254$) which included score 3.50 to 4.

6.3. Relationship status

Respondents received the question: "Do you have a boyfriend or

girlfriend?“. A boyfriend or girlfriend was defined as someone with whom you have a strong romantic, emotional and/or sexual connection. Respondents could answer this question with (1) *Yes, I currently have a boyfriend/girlfriend*, (2) *No, but I did have a boyfriend/girlfriend before*, (3) *No and I have never had a boyfriend/girlfriend*. The variable was recoded into a dummy variable with respondents who did not have a boyfriend or girlfriend at the time of the data collection being recoded as 0 = “single” ($N = 444$) and respondents who did have a boyfriend/girlfriend at the time of the data collection being given value 1 = “in a relationship” ($N = 99$).

6.4. Sexting behavior during a strict lockdown period

Four items based on the sexting scales of Van Ouytsel et al. (2017) and Gámez-Guadix et al. (2017) were included. Respondents were asked how often they did the following things online as a form of sexting (i.e., defined as the sharing of sexually oriented messages, pictures or videos) during the lockdown period of the COVID-19 pandemic (i.e., 18th of March until 18th of May) using a 7-point Likert scale (1 = *Never*, 2 = *Once per month*, 3 = *Several times per month*, 4 = *Once per week*, 5 = *Several times per week*, 6 = *Daily*, 7 = *Several times per day*): “Sent a text message about sex” (i.e., sexting type one), “Sent a picture/video or had a video conversation in which you were only wearing underwear or swimwear” (i.e., sexting type two), “Sent a picture/video or had a video conversation in which your private body parts could be seen” (i.e., sexting type three), and “Sent a picture/video or had a video conversation in which you were doing something sexual (e.g., pleasuring oneself sexually)” (i.e., sexting type four). Based on adolescents’ relationship statuses (i.e., in a relationship or not), adolescents indicated whether they sent such messages to either their boyfriend/girlfriend (i.e., for adolescents in a relationship) or to someone who is not their boyfriend/girlfriend (i.e., for single adolescents). The Shapiro-Wilk test was significant for all sexting types, $p < .001$, indicating non-normality. Therefore, outcomes of dependent variables were categorized with value 1 representing no engagement in sexting ($N_{\text{type 1}} = 342$, $N_{\text{type 2}} = 418$, $N_{\text{type 3}} = 494$, $N_{\text{type 4}} = 509$), and values 2–3, 4–5, and 6–7 representing respectively a low ($N_{\text{type 1}} = 104$, $N_{\text{type 2}} = 65$, $N_{\text{type 3}} = 23$, $N_{\text{type 4}} = 18$), medium ($N_{\text{type 1}} = 81$, $N_{\text{type 2}} = 52$, $N_{\text{type 3}} = 22$, $N_{\text{type 4}} = 13$), and high frequency ($N_{\text{type 1}} = 16$, $N_{\text{type 2}} = 8$, $N_{\text{type 3}} = 4$, $N_{\text{type 4}} = 3$) of the engagement in different sexting types.

6.5. Sexting gratifications sought

Following methods of existing studies (Leung, 2013; Reed et al., 2020) on gratifications sought of media uses, the measure of sexting gratifications sought was developed based on (1) existing scales measuring motivations for sexual online media use (e.g., sexting) (e.g., Bianchi et al., 2016), (2) qualitative and quantitative research focusing on sexting in particular (e.g., Lippman & Campbell, 2014) and (3) literature on individuals’ different (developmental) needs during social distancing (e.g., Orben et al., 2020). If adolescents engaged in any form of sexting during a strict lockdown period in the COVID-19 pandemic, adolescents responded to 27 items clarifying why they did so using a 7-point Likert scale (1 = *Strongly disagree*; 7 = *Strongly agree*).

Specifically, 2 items adapted from the Sexting Motivations Questionnaire (Bianchi et al., 2016) reflected sexual arousal needs (e.g., “Because I was aroused”). Six items based on the Sexting Motivations Questionnaire (Bianchi et al., 2016) and the Sextpectancies Measure (Dir et al., 2013) addressed relationship maintenance needs. Two items represented intimacy needs (e.g., “To feel more connected to that person”). Two items further reflected affirmation needs (e.g., “Because I think that I will be in a relationship with this person if I do this” [for adolescents in a relationship: “To get a feeling of confirmation that I have a boyfriend/girlfriend”]). Lastly, two items represented partner pressure (e.g., “Because the other person was pressuring me”). In terms of peer approval needs, three items were based on the Sextpectancies

Measure (Dir et al., 2013) and Sexting Motivations from Reed et al. (2020) (e.g., “Because my friends would think I’m cool if I did it”). As for body acceptance needs, four items were created based on the Sexting Motivations Questionnaire (Bianchi et al., 2016) and the Sextpectancies Measure (Dir et al., 2013) (e.g., “To accept my body”). Lastly, six items reflected emotional regulation needs based on Papacharissi and Rubin’s (2000) Internet Use Motives and the Motivations for Internet Pornography Use scale (Paul & Shim, 2008). Specifically, two items represented boredom regulation (e.g., “To pass the time when I’m bored”), two items represented loneliness regulation (e.g., “To feel less alone”), and two items reflected stress regulation (e.g., “To relax”).

As the sexting needs subscales were adapted from existing research, a confirmatory factor analysis was conducted using Mplus (version 8.3) to validate the proposed factor structure. The initial CFA indicated a poor to acceptable model fit, $\chi^2(153) = 614.04$, $p < .001$, CFI = 0.91, TLI = 0.87, RMSEA = 0.12. Therefore, the modification indices produced by the CFA were examined to determine the source of misfit. Following Byrne’s recommendations (1999), items which showed a high shared variance were deleted. Three items were omitted (i.e., 2 items of the body acceptance factor and one item of the peer approval needs factor) after carefully considering their added value to the different factors. After removing the three items, the model showed an acceptable to good model fit, $\chi^2(99) = 242.01$, $p < .001$, CFI = 0.96, TLI = 0.95, RMSEA = 0.08. See Table 1 for the final subscales and their items.

The subscales were internally consistent as significant correlations emerged between the two items of sexual arousal needs, $r = 0.68$, $p < .01$, intimacy needs, $r = 0.85$, $p < .01$, affirmation needs, $r = 0.87$, $p < .01$, partner pressure, $r = 0.84$, $p < .01$, peer approval needs, $r = 0.86$, $p < .01$, body acceptance needs, $r = 0.97$, $p < .01$, boredom regulation, $r = 0.88$, $p < .01$, loneliness regulation, $r = 0.92$, $p < .01$, and stress regulation, $r = 0.84$, $p < .01$. New variables were created by averaging the item scores.

7. Data analysis

The Statistical Package for the Social Sciences (SPSS) version 26.0 (2019) was used to conduct the data analyses. Frequencies, descriptive data, and Chi-Square tests were used for preliminary analyses and to answer the first RQ (i.e., the prevalence of the different sexting gratifications sought). Then, to address RQ2, we first tested whether a ordered logit model fit our data. However, the proportional odds assumption was violated (Osborne, 2015). As such, following Williams’ recommendations, we employed generalized ordered logit (i.e., gologit) models, which are also not restricted in terms of the non-normally distributed outcomes (Williams, 2016). We further tested the need for a multilevel approach since the nested structure of the data in schools could violate the assumption of independence and identical distribution of the observations (Maas & Hox, 2004). Mixed generalized ordered logit regressions in SPSS with ordinal outcomes sexting type 1, sexting type 2, sexting type 3, and sexting type 4 were tested. The Wald Z test was insignificant for each sexting type (sexting type 1 $p = .077$, sexting type 2 $p = .198$, sexting type 3 $p = .173$, sexting type 4 $p = .187$) and, as such, it could be concluded that there is no evidence of significant variation across the different groups at the school level. Therefore, accounting for the nesting of the data is redundant. Gratifications sought for sexting during the COVID-19 pandemic were only asked to adolescents who indicated that they engaged at least once in one of the four sexting types ($N = 222$). As such, this subsample was used. Sexting types in this table are based on ordinal data. First category = no engagement in the

² Note that we tested convergent validity of the arousal, boredom regulation, stress regulation, and loneliness regulation subscales with similar subscales of adolescents’ pornography use gratifications during a strict lockdown period. The latter was created for the study of Maes & Vandebosch (2021). Convergent validity was confirmed for these subscales.

Table 1
Sexting gratifications sought subscales and corresponding items.

Subscale	Items	Mean	SD
Arousal	1. Because I was aroused	3.80	2.12
	2. To gratify myself sexually	2.87	2.01
Intimacy needs	1. To feel more connected to that person (for adolescents in a relationship: person was adapted to boyfriend/girlfriend)	3.30	2.09
	2. To improve the relationship with that person (for adolescents in a relationship: to express my love for my boyfriend/girlfriend)	3.29	2.16
Relational affirmation	1. Because I think that I will be in a relationship with this person if I do this (for adolescents in a relationship: to get a feeling of confirmation that I have a boyfriend/girlfriend)	2.71	1.91
	2. To confirm that this person wants to be in a relationship with me (for adolescents in a relationship: to feel certain about the relationship with my boyfriend/girlfriend)	2.79	1.91
Partner pressure	1. Because the other person was pressuring me (for adolescents in a relationship: person was adapted to boyfriend/girlfriend)	1.72	1.33
	2. I first did not want to, but the other person did so I went along (for adolescents in a relationship: person was adapted to boyfriend/girlfriend)	1.68	1.35
Peer approval	1. Because all my friends are doing it	1.63	1.21
	2. Because my friends would think I'm cool if I did it	1.54	1.31
Body acceptance	1. To accept my body	2.89	1.84
	2. To love my body	2.94	1.88
Boredom regulation	1. To pass the time when I'm bored	3.02	1.91
	2. To fill the time	2.92	1.89
Stress regulation	1. To relax	3.27	1.92
	2. To unwind	2.87	1.79
Loneliness regulation	1. To feel less alone	2.66	1.85
	2. To have the feeling that I'm not on my own	2.72	1.85

Note. Gratifications sought for sexting during COVID-19 were only asked to adolescents who indicated that they engaged at least once in one of the four sexting types (N = 222). As such, this subsample was used.

particular sexting type (but respondents did engage in another sexting type). Second category = low frequencies of the sexting type (i.e., less than once per month and one to three times per month). Third category = middle frequencies of the sexting type (i.e., once per week to several times per week). Fourth category = high frequencies of the sexting type (i.e., each day to several times per day). Gratifications sought were used as predictors and control variables (i.e., age, sex, educational level, developmental status, sexual orientation, and relationship status) were added as covariates. For RQ3 (i.e., individual differences in gratifications sought), a series of linear regressions were conducted. Different gratifications sought were entered as dependent variables, while sex, developmental status, and relationship status were entered as predictors. Also, age, education level, and sexual orientation were entered as control variables. For the final RQ (i.e., the moderating role of sex, developmental status and relationship status), interaction terms between sex, developmental status and relationship status and the centered gratifications sought were added to the four gologit models. By default, SPSS excludes cases which included missing variables in analyses. For RQ2-4, the study also accounted for.

8. Results

8.1. Descriptive information

Of the total analytical sample, 222 adolescents (40.9% of total sample) reported having engaged in at least one of four types of sexting behaviors during a strict lockdown period in the COVID-19 pandemic. In this subsample, sending a text about sex (i.e., sexting type 1) was the

most common sexting behavior ($M = 3.38, SD = 1.52$) and the sending of a picture or video in which one was doing something sexual, or having a video conversation in which one was doing something sexual (i.e., sexting type 4) was the least common sexting behavior ($M = 1.40, SD = 1.10$). Table 2 shows that, if adolescents engaged in sexting, low and middle frequencies were the most common among all four sexting types. Particularly, 19.2%, 12%, 4.2%, and 3.3% of the total sample indicated to respectively engage in sexting type 1, 2, 3, and 4 less than once per month to one to three times per month during a strict lockdown period. In terms of sexting on a weekly basis to several times per week during a strict lockdown period, 14.9%, 9.6%, 4.1%, and 2.4% respectively engaged in sexting type 1, 2, 3, and 4. For all sexting types, high frequencies were the least common with 2.9%, 1.5%, 0.7%, and 0.6% respectively engaging in sexting type 1, 2, 3, and 4 on a daily basis.

RQ1 addressed the prevalence of different gratifications sought of sexting during a strict lockdown period. Among the 40.9% adolescents who reported to have engaged in at least one of the 4 sexting types during a strict lockdown period, arousal needs appeared to be the most common ($M = 3.33, SD = 1.89$), followed by intimacy needs ($M = 3.30, SD = 2.04$), stress regulation ($M = 3.07, SD = 1.78$), boredom regulation ($M = 2.98, SD = 1.85$), body acceptance ($M = 2.92, SD = 1.85$), relational affirmation ($M = 2.75, SD = 1.85$), loneliness regulation ($M = 2.69, SD = 1.82$), and partner pressure ($M = 1.70, SD = 1.29$). Peer approval needs were the least common ($M = 1.58, SD = 1.13$).

8.2. Generalized ordered logit models

RQ2 addressed different gratifications sought as predictors of different types of sexting during a strict lockdown period. Table 3 shows the zero-order correlations between the gratifications sought and the different sexting types. For the first gologit model, sexting type one was entered as the dependent variable. The model showed a good fit; $\chi^2(15) = 78.901, p < .001$. Results showed that only arousal was moderately related to adolescents' engagement in sexting type one during a strict lockdown period in the COVID-19 pandemic, $B = 0.552, exp(\beta) = 1.736, p < .001$. For the second gologit model, sexting type two was entered as the dependent variable. The model showed a good fit; $\chi^2(15) = 53.207, p < .001$. Results indicated that both arousal, $B = 0.320, exp(\beta) = 1.377, p < .01$, and relational affirmation, $B = 0.333, exp(\beta) = 1.395, p < .01$, were slightly related to adolescents' engagement in sexting type two. As for the third gologit model, sexting type three was entered as the dependent variable. The model showed a good fit; $\chi^2(15) = 73.488, p < .001$. Arousal, $B = 0.454, exp(\beta) = 1.575, p < .01$, and partner pressure, $B = 0.630, exp(\beta) = 1.878, p < .01$, were moderately related to adolescents' engagement in sexting type three. Finally, the last gologit model included sexting type four as a dependent variable. The model showed a good fit; $\chi^2(15) = 78.529, p < .001$. This model shows that partner pressure, $B = 0.887, exp(\beta) = 2.429, p < .01$, was strongly related with adolescents' engagement in sexting type four during a strict lockdown period. Also, stress regulation, $B = 0.632, exp(\beta) = 1.881, p < .05$, was moderately related to this sexting type (see Table 4).

8.3. Individual differences

RQ3 addressed individual differences in terms of the gratifications sought for sexting during a strict lockdown period in the COVID-19 pandemic. Table 5 shows that being a boy slightly predicted the gratifications sought of higher arousal, $\beta = -0.216, p < .05$, relational affirmation, $\beta = -0.129, p < .05$, and peer approval, $\beta = -0.126, p < .05$. Further, being at an advanced developmental stage slightly predicted stress regulation gratifications sought, $\beta = 0.153, p < .05$. Lastly, being in a relationship slightly predicted needs regarding higher arousal, $\beta = 0.183, p < .01$, intimacy, $\beta = 0.236, p < .001$, relationship affirmation, $\beta = 0.160, p < .05$, and stress regulation, $\beta = 0.190, p < .01$.

RQ4 addressed individual differences which may moderate the relations between different gratifications sought and different sexting

Table 2
Engagement in different sexting types.

	Full analytical sample	Sex		Developmental status		Relationship Status		
		Boys (N = 164)	Girls (N = 358)	Early (N = 230)	Advanced (N = 254)	Single (N = 444)	Relationship (N = 99)	
Sexting type 1 (M = 1.97, SD = 1.52)	$\Delta\chi^2(df)$	7.68 (3)		6.69 (3)		104.52 (3) ***		
	Never	63.0%	63.8%	62.6%	67.0%	55.9%	72.1%	22.2%
	Low	19.2%	13.8%	21.7%	18.3%	22.4%	16.7%	30.3%
	Middle	14.9%	17.8%	13.6%	12.2%	18.5%	10.1%	36.4%
	High	2.9%	4.6%	2.2%	2.6%	3.1%	1.1%	11.1%
Sexting type 2 (M = 1.58, SD = 1.25)	$\Delta\chi^2(df)$	1.94 (3)		2.08 (3)		59.93 (3) ***		
	Never	77.0%	75.9%	77.5%	75.7%	75.6%	82.9%	50.5%
	Low	12.0%	10.9%	12.5%	13.5%	11.4%	10.6%	18.2%
	Middle	9.6%	10.9%	8.9%	10.0%	10.6%	5.6%	27.3%
	High	1.5%	2.3%	1.1%	0.9%	2.4%	0.9%	4.0%
Sexting type 3 (M = 1.24, SD = .90)	$\Delta\chi^2(df)$	1.16 (3)		6 (3)		53.34 (3)***		
	Never	91.0%	90.8%	91.1%	93.0%	88.6%	95.0%	72.7%
	Low	4.2%	3.4%	4.6%	3.5%	5.5%	2.9%	10.1%
	Middle	4.1%	4.6%	3.8%	2.2%	5.5%	1.8%	14.1%
	High	0.7%	1.1%	0.5%	1.3%	0.4%	0.2%	3.0%
Sexting type 4 (M = 1.16, SD = .73)	$\Delta\chi^2(df)$	4.73 (3)		9.2 (3)*		35.42 (3)***		
	Never	93.7%	92.0%	94.6%	96.5%	91.3%	96.6%	80.8%
	Low	3.3%	2.9%	3.5%	0.9%	5.5%	2.0%	9.1%
	Middle	2.4%	4.0%	1.6%	1.7%	2.8%	1.1%	8.1%
	High	0.6%	1.1%	0.3%	0.9%	0.4%	0.2%	2.0%

Note. N = 543. First category = no engagement in the particular sexting type (but respondents did engage in another sexting type). Second category = low frequencies of the sexting type (i.e., less than once per month and one to three times per month). Third category = middle frequencies of the sexting type (i.e., once per week to several times per week). Fourth category = high frequencies of the sexting type (i.e., each day to several times per day). Pearson correlations between sexting types and gratifications sought. *p < .05. **p < .01. ***p < .001. Percentages were calculated using the total of different groups (i.e., full sample, early and advanced developmental status, boys and girls, and single and relationship). Regarding developmental status, 59 missing values were observed. Pearson Chi-Square tests were used to test whether differences between the groups of developmental status (i.e., early and advanced), sex (i.e., boys and girls) and relationship status (i.e., single and relationship) were significant. *p < .05. **p < .01. ***p < .001.

Table 3
Zero-order correlations.

	Sexting type 1	Sexting type 2	Sexting type 3	Sexting type 4
Arousal	0.492**	0.398***	0.469***	0.445***
Intimacy needs	0.308***	0.271***	0.276***	0.266***
Relational affirmation	0.295***	0.299***	0.226**	0.225**
Partner pressure	0.086	0.152*	0.265***	0.344***
Peer approval	0.097	0.116	0.172*	0.293***
Body acceptance	0.153*	0.249***	0.283***	0.294**
Boredom regulation	0.229**	0.193**	0.256***	0.284***
Stress regulation	0.425***	0.333***	0.372***	0.412***
Loneliness regulation	0.220**	0.173**	0.260***	0.296***

Note. Gratifications sought for sexting during the COVID-19 pandemic were only asked to adolescents who indicated that they engaged at least once in one of the four sexting types (N = 222). As such, this subsample was used. Sexting types in this study are ordinal data. First category = no engagement in the particular sexting type (but respondents did engage in another sexting type). Second category = low frequencies of the sexting type (i.e., less than once per month and one to three times per month). Third category = middle frequencies of the sexting type (i.e., once per week to several times per week). Fourth category = high frequencies of the sexting type (i.e., each day to several times per day). Pearson correlations between sexting types and gratifications sought. *p < .05. **p < .01. ***p < .001.

types. Three significant interaction terms emerged. Particularly, the interaction between sex and partner pressure slightly predicted the engagement in sexting type four, $B = -0.260$, $exp(\beta) = 0.771$, $p < .05$. Girls were more likely to engage in the most explicit sexting type as a response to partner pressure, $B = 0.300$, $exp(\beta) = 1.350$, $p < .01$. Further, the interaction term between developmental status and body acceptance slightly predicted adolescents' engagement in sexting type four, $B = 0.201$, $exp(\beta) = 1.222$, $p < .01$. Specifically, early adolescents were more likely to engage in the most explicit sexting type to accept

their bodies, $B = -0.153$, $exp(\beta) = 0.858$, $p < .05$. Lastly, the interaction between relationship status and intimacy needs slightly predicted adolescents' engagement in sexting type two, $B = 0.233$, $exp(\beta) = 1.262$, $p < .05$. Single adolescents were more likely to engage in sexting type two as a response to intimacy needs, $B = -0.183$, $exp(\beta) = 0.833$, $p < .05$.

9. Discussion

9.1. Overall discussion and recommendations for future research

The current study aimed to explore adolescents' sexting behaviors during a strict lockdown period of the COVID-19 pandemic. Results showed that 40.9% of the adolescents engaged in at least one of the four types of sexting during this exceptional context. Presumably, social distancing stimulated sexting behaviors in adolescents as in Belgium in normal contexts, studies point to prevalence rates of 6.3% among early adolescents (12–15 years old) (Van Ouytsel et al., 2020) and 15% among late adolescents (15–18 years old) (Van Ouytsel et al., 2014). Such presumptions need to be interpreted with caution, as the current study did not examine adolescents' sexting frequencies before and after a strict lockdown period and, therefore, could not test a possible evolution via the implementation of latent growth modeling.

Scholars are advised to explore the possible impact of adolescents engagement in sexting during a strict lockdown period. Presumably, adolescents turned to sexting in order to temporarily replace normative offline sexual behaviors. Therefore, the negative (e.g., early sexual initiation) and/or positive implications (e.g., sexual agency) of such behaviors could be more pronounced in comparison to a normal context. Such presumptions can be nuanced by more detailed insights in the frequencies of sexting. Though the group of adolescents who engaged in some form of sexting during a strict lockdown is considered to be larger relative to a normal context, high frequencies of sexting still remained rare during the examined strict lockdown period, showing similarities with a normal context (Madigan et al., 2018).

The current study's findings further contextualized such online

Table 4
Generalized ordered logit models.

Predictors	Sexting type 1			Sexting type 2			Sexting type 3			Sexting type 4		
	B	S.E.	Exp (β)	B	S.E.	Exp (β)	B	S.E.	Exp (β)	B	S.E.	Exp (β)
Age	0.026	0.125	1.027	-0.211	0.121	0.810	0.006	0.193	1.006	0.130	0.256	1.139
Educational level	0.137	0.166	1.147	-0.094	0.164	0.911	-0.144	0.234	0.866	-0.226	0.306	0.798
Sex	-0.360	0.338	0.698	-0.175	0.324	0.839	0.646	0.490	1.907	0.188	0.585	1.206
Relationship status	1.096	0.347	2.992**	0.549	0.341	1.732	1.399	0.521	4.052**	1.120	0.662	3.065
Sexual orientation	-0.930	0.540	0.394	0.419	0.498	1.520	1.463	0.606	4.317	1.568	0.720	4.795*
Developmental stage	0.502	0.326	1.651	-0.188	0.312	0.829	0.612	0.477	1.845	0.987	0.653	2.682
Arousal	0.552	0.130	1.736***	0.320	0.126	1.377**	0.454	0.166	1.575**	0.481	0.235	1.618*
Intimacy	0.052	0.119	1.053	-0.137	0.120	0.872	-0.037	0.153	0.964	-0.009	0.194	0.991
Relational affirmation	-0.054	0.135	0.947	0.333	0.128	1.395**	-0.002	0.163	0.998	-0.169	0.194	0.844
Partner pressure	0.125	0.192	1.133	0.030	0.165	1.031	0.630	0.236	1.878**	0.887	0.323	2.429**
Peer approval	-0.018	0.213	0.983	-0.083	0.185	0.921	-0.244	0.259	0.783	-0.207	0.312	0.813
Body acceptance	-0.197	0.112	0.821	0.046	0.103	1.047	0.042	0.137	1.042	0.106	0.167	1.112
Boredom	0.052	0.113	1.053	-0.034	0.108	0.967	0.284	0.154	1.328	0.351	0.204	1.420
Stress	0.146	0.148	1.157	0.142	0.145	1.153	0.159	0.185	1.173	0.632	0.274	1.881*
Loneliness	-0.145	0.128	0.865	-0.082	0.120	0.921	-0.109	0.169	0.897	-0.202	0.217	0.817

Note. Gratifications sought for sexting during the COVID-19 pandemic were only asked to adolescents who indicated that they engaged at least once in one of the four sexting types (N = 222). As such, this subsample was used. Sexting types in this study are ordinal data. First category = no engagement in the particular sexting type (but respondents did engage in another sexting type). Second category = low frequencies of the sexting type (i.e., less than once per month and one to three times per month). Third category = middle frequencies of the sexting type (i.e., once per week to several times per week). Fourth category = high frequencies of the sexting type (i.e., each day to several times per day). Sex was coded as 0 = boys and 1 = girls. Developmental status was coded as 0 = early developmental stage and 1 = advanced developmental stage. Sexual orientation was coded as 0 = heterosexual and 1 = non-heterosexual. Relationship status was coded as 0 = single and 1 = in a relationship. *p < .05. **p < .01. ***p < .001.

behaviors during a lockdown period and may offer explanations for possible changes in adolescents' sexting behaviors after the pandemic. Particularly, findings showed that adolescents mainly turned to sexting as a response to sexual arousal and intimacy needs. This implies that the sexting may have temporarily replaced offline sexual behaviors with intimate partners. Future studies are therefore recommended to explore how this temporary shift may have affected adolescents' sexuality and social development. Particularly, complexities characterizing offline sexual and intimate interactions (e.g., making a mistake or taking into account a partner's needs) are absent during sexting. Gradually learning to respond to such challenges during intimate activities can be considered part of a normative sexuality development (Fortenberry, 2013).

As opposed to the suggestions of Orben et al. (2020), who reflected that adolescents were likely to have experienced a more articulated need for peer approval during the COVID-19 pandemic, our study found that peer approval was the least prominent motivation of adolescents to engage in sexting during a strict lockdown period. Also, a contrast can be noted when addressing such motivations in a normal context, as peer approval has been demonstrated to be a frequently reported reason for adolescents to engage in sexting (Cooper et al., 2016). Though adolescents turned more frequently to social media to connect with their peers during the COVID-19 pandemic (Cauberghe et al., 2021), adolescents' inability to meet with peers in-person may have created a context in which the direct offline peer influence was absent. As such, the need to fit in the peer group may have changed during the lockdown and may have been regarded as less important by adolescents when it comes to sexting. A less prevalent occurrence of sexting as a response to peer approval needs may imply a positive consequence of the COVID-19 pandemic. Sexual health scholars highlight the necessity of engaging in sexting behaviors as an individual choice, rather than this behavior being stimulated by external factors such as peers and one's need to 'fit in' a certain group (Ringrose et al., 2013). Indeed, one's self-efficacy and control over one's own sexual behaviors is especially relevant for a healthy and normative development of adolescents' sexuality (Harden, 2014).

Different gratifications sought could be linked to adolescents' engagements in specific types of sexting during a strict lockdown period. Such knowledge can inform practitioners and policy makers in responses to future pandemics or periods after social isolation. Particularly, practitioners can support adolescents via interventions to reduce

possible mental health issues related to particular antecedents of sexting behaviors (e.g., partner pressure). The first three sexting types were slightly to moderately related to adolescents' needs to gratify sexual arousal. Such arousal motivations can be considered harmless and expected among adolescents (Fortenberry, 2013). Also, in line with findings of Currin, Pascarella, and Hubach (2020) among adults, the current study shows that being physically separated from a partner or someone who adolescents consider a potential partner was a relevant reason for adolescents to engage in sexting during a strict lockdown period. Previous findings further indicated that individuals with higher relational anxiety were most likely to only send textual sexting messages because they were uncomfortable with visual sexting, but still wanted to meet their partner's needs (Currin, Pascarella, & Hubach, 2020; Drouin & Landgraff, 2012). The current study's findings point to opposite directions given that relational affirmation was only linked to a visual form of sexting. Being physically distant may have fueled relational concerns and, therefore, may have stimulated adolescents to show more of their bodies in their sexting messages in order to maintain one's intimate relationship. At the same time, scholars have also argued that adolescents communicated more online during the pandemic (Hamilton et al., 2020), which may also imply online communication between intimate partners has increased. The latter may have lowered the threshold to engage in more explicit sexting behaviors.

Results further showed a moderate relation between the most explicit sexting type (i.e., depiction of sexual acts) and stress regulation. Recent reports point to a significant rising of adolescents' stress levels during a strict lockdown period (e.g., Francisco et al., 2020). Though the relation between stress regulation and this sexting type was rather small, practitioners should still pay attention to this particular finding since the engagement in online sexual behaviors to regulate stress is described in the literature as avoidance-oriented coping-related behavior (Bóthe, Tóth-Király, Potenza, Orosz, & Demetrovics, 2020). Such behaviors encompass denying, minimizing, or otherwise avoiding dealing directly with stressful demands. Reliance on such avoidance coping behavior are generally linked to more increased stress levels and depressive symptoms (Holahan et al., 2005).

Alarmingly, the current study demonstrates that adolescents who experienced more partner pressure were moderately to strongly more likely to engage in the most explicit sexting practices (i.e., depiction of intimate body parts and sexual acts). The latter requires attention from

Table 5
Individual differences for gratifications sought.

	A		I		RA		PP		PA		BA		BR		SR		LR	
	B	β	B	β	B	β	B	β	B	β	B	β	B	β	B	β	B	β
Age	0.291	0.210**	0.197	0.135	0.184	0.143	0.148	0.168	0.146	0.183*	0.190	0.145	0.170	0.130	0.236	0.183*	0.181	0.148
Ed. level	0.122	0.056	0.155	0.067	0.291	0.144*	-0.051	-0.037	-0.010	-0.008	0.118	0.057	0.406	0.197**	0.298	0.146*	0.341	0.176*
Sex. or.	1.171	0.143*	-0.139	-0.016	-0.716	-0.095	0.006	0.000	-0.216	-0.046	0.520	0.067	0.483	0.063	0.557	0.073	-0.296	-0.041
Sex	-0.553	-0.126*	-0.217	-0.047	-0.527	-0.129*	-0.142	-0.051	-0.366	-0.144*	0.003	0.001	-0.488	-0.117	-0.447	-0.109	-0.372	-0.095
Dev. status	0.524	0.125	0.039	0.122	0.495	0.128	-0.091	-0.034	0.090	0.037	0.276	0.070	0.519	0.132	0.596	0.153*	0.440	0.119
Rel. status	0.824	0.183**	1.117	0.236**	0.667	0.160*	-0.148	-0.052	-0.028	-0.011	0.432	0.102	-0.317	-0.075	0.796	0.190**	0.065	0.016

Note. Gratifications sought for sexting during the COVID-19 pandemic were only asked to adolescents who indicated that they engaged at least once in one of the four sexting types (N = 222). As such, this subsample was used. A = arousal, I = intimacy needs, RA = relational affirmation, PP = partner pressure, PA = peer approval, BA = body acceptance, BR = boredom regulation, SR = stress regulation, LR = loneliness regulation. Sex was coded as 0 = boys and 1 = girls. Developmental status was coded as 0 = early developmental stage and 1 = advanced developmental stage. Sexual orientation was coded as 0 = heterosexual and 1 = non-heterosexual. Relationship status was coded as 0 = single and 1 = in a relationship. *p < .05. **p < .01. ***p < .001.

practitioners and scholars due to its possibly dangerous consequences in terms of adolescents' well-being and broader developmental trajectories (Englander & McCoy, 2017), especially in exceptional times of social distancing. Scholars have recently argued that a harmful context was created in which adolescents are more vulnerable for the negative implications sexual coercion, facilitated through the uses of technology (Jatmiko et al., 2020). Adolescents were unable to connect with peers in-person, who have been proven to be a protective factors for adolescents' mental health (van Harmelen et al., 2017). Future studies should further explore the dynamics of this specific link while accounting for contextual (e.g., low parental support) and personal factors (e.g., low self-esteem) which are likely to place a victim of sexual coercion in a more vulnerable position (Lacasse & Mendelson, 2007).

We especially warn for the gendered nature of such technology-facilitated sexual coercion given that girls were more likely to engage in the most explicit sexting type as a response to partner pressure. Similar results have previously been found with studies demonstrating that girls are more often the victim of offline and online sexual coercion, in comparison to boys (Glowacz et al., 2018; Reed et al., 2017). With the exceptional context of the COVID-19 pandemic possibly intensifying detrimental outcomes of sexual coercion (Jatmiko et al., 2020), future research may especially want to study whether girls' engagement in sexting as a response to partner pressure can also be linked to offline forms of sexual coercion. Indeed, studies show that sexting can function as a continuation of offline forms of harmful sexual behaviors (Choi et al., 2016). Given that some of the girls in our sample engaged in explicit sexting because of partner pressure, we encourage educational efforts to discuss sexting in combination with efforts to promote positive sexuality, healthy relationships, and to prevent sexual coercion. Educational curricula could, for example, focus on how to deal with pressure to engage in sexting by explaining boundaries within romantic relationships, activating sexual agency, and emphasizing the necessity of mutual consent as part of healthy, sexual interactions. Educators are especially encouraged to recognize and counter the double standard linked to sexting behaviors. Particularly, research shows that girls can suffer reputational damage when engaging in sexting and, at the same time, lose their value for an intimate partner if they do not engage in sexting. Boys often receive praise for sexting as it is considered a display of masculinity (Ringrose et al., 2013). Our study adds to these findings that girls are also more at risk for partner pressure in a lockdown period. When discussing sexting in educational curricula, it is especially necessary to foster sexual equality between boys and girls.

Further, additional conditional relations show that adolescents with an early developmental status were more likely to engage in the most explicit sexting type in order to accept their bodies. This particular finding is in contrast with existing research pointing to late adolescents instead of early adolescents using sexting for this reason (Bianchi et al., 2019). Caubergh et al. (2021) demonstrated that adolescent more often turned to social media during a lockdown period. Such social media exposure likely heightens their exposure to highly curated and more mature bodies meeting appearance standards, for instance when being exposed to influencers. It may be possible that early adolescents felt a higher need to accept their bodies because their bodies are less likely to reflect the idealized and, hence, more mature influencer bodies on social media. Also, adolescents with an early developmental status still have to develop the cognitive skills to rationalize and to cope with their body changes and ideal bodies in social media (Maes et al., 2021). This makes them vulnerable for the promotion of ideal bodies and, presumably, explains a higher need for body acceptance, to which they responded via visual sexting. Future research is encouraged to further explore this proposed reasoning.

The last conditional relation which emerged shows that single adolescents were more likely to engage in sexting in which one is wearing underwear or swimwear as a response to intimacy needs. Presumably, single adolescents are still in the midst of establishing intimacy with one's sexting partner while still being reserved about showing one's

private parts.

The current study's insights also offer valuable information beyond the scope of the COVID-19 pandemic. Particularly, the study shows that a focus on different sexting practices is relevant, just as a focus on different offline sexual behaviors brings more perspective to adolescents' sexuality (Fortenberry, 2013). The more explicit the sexting practice, the less adolescents engaged in such practices. These insights can shed light on the dual nature of outcomes of sexting as implications can presumably vary according to the explicitness of the sexting behaviors and its unique motivators. However, studies exploring such presumptions are missing. As such, future studies are warranted to operationalize different sexting practices separately and further tap into their unique implications.

10. Limitations

The results of this study must be considered within the context of its limitations. First, the vast majority of the adolescents included in the sample were single (81.8%) and heterosexual (87.1%). Regarding the latter, the sexting experiences of sexual minority youth may differ from those who identify as heterosexual, especially during lockdown periods. LGBTQ+ youth is a higher risk for cyberbullying and online sexual coercion (Priebe & Svedin, 2012). Therefore, future research is encouraged to quantitatively and/or qualitatively explore sexual minority adolescents' experiences with sexting during lockdown periods. Also, this study was conducted in Belgium and, therefore, it may be possible that different findings will occur in other (non-Western) cultural settings. Particularly, Belgium is known to be a liberal and progressive country with regards to sexuality. Therefore, frequencies of adolescents' sexting behaviors during a strict lockdown period and motivations for such online sexual behaviors may vary from those of adolescents from other, more sexually conservative countries (e.g., Turkey) (Ševčíková, 2016). Future studies are warranted to further examine adolescents' sexting behaviors during or after the pandemic in other samples of adolescents based on their cultural settings.

Also, attention should be paid to the probability of a type II error. Since we estimated a power of .92 for our gologit models, there is a 8% probability that we committed a type II error.

Further, to measure the gratifications sought, the current study used a self-developed measure based on items of existing scales, following methods of existing research on gratifications sought of media uses (e.g., Leung, 2013). The model fit values of the CFA indicated a good model fit and the items in the scale were derived from items from previously validated scales (e.g., Bianchi et al., 2016). Yet, we were unable to validate the scale in preparatory research (i.e., pilot testing) as our research targeted behavioral responses during the COVID-19 pandemic.² At the beginning of 2020, researchers in Western countries were still unaware that a pandemic was going to start and, as such, did not prepare to study behavioral responses during a pandemic. When the pandemic started, it was further unclear how long the pandemic and public health guidelines would be present in Belgium and other countries. As such, to examine behavioral responses during the pandemic, researchers in general acted in a rather fast manner. Given the exceptional situation, this study was thus unable to conduct pilot testing of the gratifications scale. It may be possible that different items represent different gratifications sought. Hence, future studies are recommended to conduct additional validity testing.

Relatedly, to measure adolescents' developmental status, we used physical examination criteria of Petersen's et al (1998) pubertal development scale. Though physical examination criteria to measure developmental status have been the standard in conducting survey research among adolescents, we do recognize the limitations of such measurement tools. Particularly, cognitive and psychosocial development indicators, such as empathy, are not accounted for when solely assessing physical changes signaling pubertal development (Dorn, Dahl, Woodward, & Biro, 2006). As such, we encourage future research to

additionally measure such indicators in order to gain a more comprehensive understanding of adolescents' developmental status.

Further, attention should be paid to the possibility that other needs also may have been intensified during a strict lockdown period. In the current study, we specifically focused on needs that, according to the literature (e.g., Lerner et al., 2010), are believed to be especially intensified during a lockdown period and, also, that are especially relevant in the context of adolescence and sexting. Yet, during a lockdown period, other needs and gratifications sought for sexting may have been intensified as well. For example, a need for autonomy or the need for thrill also may have been more articulated and may have been gratified via sexting. Though, this has not yet been identified by previous research as a motivation to engage in sexting. In order to gain an even more comprehensive understanding of adolescents' sexual behaviors during a pandemic, future studies are advised to explore other needs which were intensified during a lockdown period and, simultaneously, to identify possible other sexting gratifications sought and their impact.

Lastly, the current study was cross-sectional and, thus, unable to identify possible evolutions in adolescents' sexting behaviors before, during and after a strict lockdown period. Further, the study was limited in making causal or temporal statements.

11. Conclusions

During a strict lockdown period of the COVID-19 pandemic, two fifth of the Belgian adolescents turned to sexting. Adolescents mainly turned to sexting in order to gratify sexual arousal and intimacy needs, whereas peer approval needs were the least common. The current study further delves into the complexities of adolescents' sexting behaviors by addressing differential sexting types (e.g., visual sexting in which one was wearing underwear/swimwear) separately, instead of positioning such types under one denominator. By doing so, more in-depth knowledge was gained regarding adolescents' sexual behaviors during a strict lockdown period. Motivations for the most explicit types point to the need for further attention among practitioners and researchers. Specifically, stress regulation was linked to the most explicit sexting type (i.e., depiction of sexual acts) during a strict lockdown period. Moreover, partner pressure was linked to two of the most explicit sexting types (i.e., depiction of private parts and depiction of sexual acts). The latter warrants future research to explore underlying mechanisms of such links and the possible implications of this behavior. We especially encourage researchers to account for the simultaneous occurrence of offline sexual coercion in combination with sexting as a response to partner pressure. When observing such harmful behaviors, scholars are warranted to account for adolescents' sex as our results point to girls being more likely to respond to partner pressure with the most explicit form of sexting. Other conditional relations further emerged according to adolescents' developmental status and relationship status.

Funding sources

This work was supported by Bijzonder Onderzoeksfonds under grant number C14/18/017.

Credit author statement

Chelly Maes: Conceptualization, Methodology, Formal Analysis, Investigation, Resources, Data Curation, Writing-Original Draft, Writing- Review & Editing. Laura Vandenbosch: Conceptualization, Methodology, Writing-Original Draft, Writing- Review & Editing, Supervision, Funding acquisition.

Acknowledgements

We want to thank Dra. Femke Konings of the KU Leuven School for Mass Communication Research for her attentive verification of the final

results.

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