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Online communication, peer relationships and school victimisation: a one-year longitudinal study during middle adolescence

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ABSTRACT

This study aimed to analyse how different styles of online and offline communication were associated in middle adolescence with certain indicators of the quality of peer relationships and school victimisation. A longitudinal study with two waves separated by one year was conducted, in which 882 adolescents aged 13–16 years old from Andalusia (Spain) completed self-report measures. Results showed that online communication was very frequently used to talk with friends, even more often that offline means. Cross-sectionally, online communication was positively associated with quality of peer relationships and negatively to school victimisation, reaching stronger associations than offline communication. Longitudinally, results indicated that more frequent text messaging was related to more easiness to make friends and no bullying in those adolescents with more initial difficulties. Thus, it suggests the need to develop safe spaces for online interactions in order to improve the quality of their relationships with their friends and partners.

Introduction

Online communication refers to several ways of communication via new electronic and Internet technologies, such as instant short messages or social network platforms (Subrahmanyam & Greenfield, 2008; Valkenburg & Peter, 2011). The HBSC study (Health Behaviour in School-aged Children), conducted in 44 European and North-American countries in collaboration with World Health Organization, showed that online communication has become a central part of mid-adolescent lives, allowing them to keep in contact with peers regardless of time and space (Matos, Tinoco, Unkovska, Bogt & Kuntsche, 2008). Data from its latest report indicated that 15-year-old adolescents communicated online more frequently than 11-year-old adolescents, and that girls used these online media more often than boys (Currie et al., 2012). In Spain, Garcia, Lopez de Ayala and Catalina (2013) conducted a survey with a representative national sample and concluded that around 75% of adolescents aged between 12 and 17 years old used social networks very often. In a study carried out in Andalusia (Spain), Bernal and Angulo (2013) concluded that adolescents used social networks preferably to communicate with their peers and stay in contact with their social reference group. Thus, internet constitutes an important framework for communication and social interaction and deserves greater attention from researchers, especially during adolescent transition to social adulthood.

Whilst in the nineties some studies identified several negative effects of online communication, such as the addictive use, casual relationships with strangers and cyberbullying, current studies

have highlighted, rather than risks, certain benefits (Ahn, 2011; Rains, Brunner, Akers, Pavlich, & Goktas, 2016). A recent review described several benefits of online communication, such as an increase in self-esteem, perceived social support and social capital, more confidence in identity experimentation and more revelation opportunities (Valkenburg & Peter, 2009). In contrast, some risks have also been identified: an increased social isolation, depression and risk for cyberbullying (Best, Manktelow, & Taylor, 2014; Casale & Fioravanti, 2011; Yang et al., 2014). In the Netherlands, a positive relationship was found between online communication, social connectedness and well-being in adolescents, although these associations only appeared in adolescents who used the internet to maintain contact with their friends, and not in those who used the internet to talk to strangers (Valkenburg & Peter, 2007). In Canadian adolescents, it was observed that different activities on the internet had different consequences. The use of instant messages was positively related to a better relationship with their boyfriend/girlfriend or with their best friend, while visiting chat rooms or playing video games on the internet were associated with the worst results in the relationship with their boyfriend/girlfriend and with their best friend (Blais, Craig, Pepler, & Connolly, 2008). HBSC study noted that an increased use of online communication was associated with more evenings a week spent with friends out of school hours, and with a better communication with friends, especially when talking to friends of the opposite gender (Boniel-Nissim et al., 2015; Kuntsche et al., 2009). Baker and Oswald (2010) concluded that individuals high in shyness reported greater associations between the use of social networks and friendship quality. These studies concluded that online communication was a powerful tool that helps to connect people, instead of favouring loneliness and isolation.

More research is needed to know how different types of online communication to talk with friends are cross-sectionally and longitudinally associated with better or worse results in peer relationships, compared to offline communication (Knop et al., 2016). Three different hypothesis can be described: a) reduction hypothesis, which expects negative results in peer relationships because of online communication; b) social compensation hypothesis, which indicates that adolescents who presents more difficulties in the relationships with peers can benefit from online communication to improve them, and c) rich-get-richer hypothesis, that proposes a greater benefit in those adolescents with better initial relationships with their peers (Lee, 2009; Valkenburg & Peter, 2007). In order to test these hypothesis, a longitudinal design is needed (Igarashi, Takai, & Yoshida, 2005). More research is needed to analyze differential effect of each type of online communication, such as social networks or instant short messages, compared to offline types of communication (i.e. in person or by phone call) on different indicators of the quality of peer relationships (Chan & Cheng, 2004). It has not been studied yet if online communication is prospectively associated with a more perceived ease of making friends or a greater perceived resistance to group pressure.

Furthermore, little is known about the effect of different kinds of online communication to talk with friends on peer victimisation in school. Literature to date has emphasised cyberbullying as a possible risk of online communication. Cyberbullying emerged as a separate field of study within online communication, to examine the repeated and intentional damage to others through computers or other mobile devices (Best et al., 2014; Dooley, Pyzalski, & Cross, 2009). Some studies showed that the trajectories of online and offline intimidation overlapped, and concluded that bullying prevention should pay attention to both aspects of intimidation (Sumter, Baumgartner, Valkenburg, & Peter, 2012). Therefore, it appears that cyberbullying and bullying are related and that they respond to different manifestations of harassment among peers. In addition, it would be of great interest to analyse if, without the experience of cyberbullying, online communication confers an increased risk or protection against ostracism at school or exerted/suffered bullying. To date, no research has longitudinally addressed the relationship between online communication to talk with friends and school victimisation.

Aims and hypotheses

Thus, the aims of this research were: a) to analyse the frequency of online and offline communication to talk with friends, paying attention to gender and age differences; b) to examine the cross-sectional and longitudinal associations between online/offline communication to talk with friends, certain indicators of the quality of peer relationships (i.e. ease of making friends and resistance to group pressure) and school victimisation (i.e. ostracism at school, suffered bullying and exerted bullying). Regarding the first aim, we expected higher use of online communication than offline communication, and a greater frequency of online communication in older adolescents and adolescent girls, in line with HBSC study (Currie et al., 2012). Regarding the second aim, we expected a positive relationship between a frequent use of online communication and better quality in peer relationships, in line with conclusions from previous studies about benefits of online communication. In this same line, we hypothesized a negative relationship between a frequent use of online communication and school victimisation, expecting benefits of online communication, rather than dangers (Best et al., 2014; Valkenburg & Peter, 2009). Previous research indicated that the trajectories of online and offline intimidation overlapped, so that an use of online communication to talk with friends and not to ciberbully, was expected to be related to lower experienced school victimisation (Sumter et al., 2012). We expected to provide support for both rich-get richer and social compensation hypothesis, so that online communication would longitudinally be associated with better relationships with friends and lower school victimisation in mid-adolescents with both positive and problematic social relationships (Lee, 2009; Valkenburg & Peter, 2007).

Methods

Participants

Participants were 882 middle adolescents (52.3% girls), aged between 13 and 16 years old (M = 14.53, SD = .73), who were enrolled in 18 secondary schools located in Andalusia (Spain). Secondary schools were selected from different locations (rural, semi-urban, urban, large city) and different ownership (public or private), and the participating classes were randomly selected in each secondary school.

Design and data collection procedure

A longitudinal study was performed with two assessments separated by one year. For data collection, a paper-based questionnaire was individually administered in each classroom. A code was created to allow the tracking with the number of high school (1–18), birth date, and gender (1 boy, 2 girl). All principles in Helsinki Declaration were respected, and informed consent was obtained from all participants and their parents. This research received approval from university ethics board.

Instrument

Online/offline communication to talk with friends
A scale was developed to assess the frequency of use of different online and offline communication means in order to talk with friends during adolescence, by phone call, by short messages using mobile applications, by social networks or meeting in person. This scale is introduced by the sentence: 'When you need to talk about something with your friends, how do you do it? Select an option on each line'. Four items are then described: 'I make a phone call to tell them', 'I send an SMS, WhatsApp, etc. to talk with them', 'I talk with them through Tuenti, Facebook, Twitter, etc.' and 'I meet up with them in person'. In order to answer each indicator, a Likert-type scale with three response options is presented (never, sometimes or frequently).

The following five questions come from the Spanish HBSC study (Mendoza, Sagrera, & Batista, 1994; Roberts et al., 2009):

Ease of making friends

After asking 'In general, how difficult do you find making friends?' a Likert-type scale with five response options is presented, ranging from 'very difficult' to 'very easy'.

Resistance to group pressure

This item is introduced by the statement: 'If your group of friends wanted to do something you do not agree with, is it easy for you to say you don't want to do it?'. Four response options are then described: 'it is very difficult for me and I do not say anything', 'it is difficult for me and I give my opinion a few times', 'sometimes I give my opinion, and sometimes I do not', and 'when this happens, I always or nearly always say that I don't agree'.

Ostracism at school, suffered bullying and exerted bullying

Several questions are introduced in order to assess these variables: 'How often do you feel that other students do not want to be with you at your secondary school and that you are isolated?', 'How often are you intentionally hassled or harassed at secondary school? (by fellow students from your own classroom or from another classroom)', and 'how often do you intentionally hassle or harass other students at your secondary school?'. For each question, a Likert-type scale is used with four response options: never, rarely, occasionally, and frequently.

Data analysis design

Regarding the first aim of the study, descriptive statistics were examined in order to analyse the frequency of online and offline communication to talk with friends, as well as the frequency distribution of peer relationships (i.e. ease of making friends and resistance to group pressure) and school victimisation variables (i.e. ostracism at school, suffered bullying and exerted bullying), in both time 1 and 2. Some repeated measures variance analyses were conducted in order to study the change in the use of each type of online and offline communication to talk with friends after the one-year follow-up. Moreover, χ^2 tests were performed to analyse gender and age differences in the frequency of online and offline communication in each time of the study.

Regarding the second aim, several analyses were conducted in order to examine the cross-sectional and longitudinal associations between online and offline communication to talk with friends, and certain indicators of the quality of peer relationships (i.e. ease of making friends and resistance to group pressure) and school victimisation (i.e. ostracism at school, suffered bullying and exerted bullying). First, five stepwise regression analyses were performed to cross-sectionally explain each indicator of quality in peer relationships and school victimisation in time 1 (dependent variables, DV), on the basis of gender and age (Step 1), and the frequency of use of all online and offline communication means in time 1 (Step 2). The percentage of variance explained (R^2) was calculated in each step, as well as the significance of the effect of the variables introduced in the model. Second, longitudinal associations between the use of online and offline communication means in time 1 and quality of peer relationships and school victimisation in time 2 were examined, controlling gender, age and the quality of peer relationships and school victimisation in time 1. Five stepwise regression analyses were conducted in order to explain each indicator of quality in peer relationships and school victimisation in time 2 (dependent variables, DV). In the first step of these analyses, gender and age were introduced. In the second step, the measure in time 1 of the dependent variable was added, in order to control the initial level. In the third step, all online and offline communication means in time 1 were introduced. The percentage of variance explained in each step was calculated (R^2). Furthermore, the significant associations detected between the

frequency of use of an online or offline communication mean in time 1 and an indicator of peer relationships or school victimisation were further examined by χ^2 tests.

Results

Descriptive statistics, change in the use of communication means, and gender and age differences

Figure 1 describes the percentage distribution of the use of each type of communication to talk with friends. Results indicated that in time 1, 67.3% of participants frequently communicated through social networks and 42.3% sent online text messages to talk with their friends. In time 2, text messaging was the most used mean to talk with friends (71.5%), followed by social networks (39%) and meeting in person (38.7%). An increase after the follow-up was observed in the use of text messaging, $F(1, 847) = 244.01$, $p < .001$, $\eta^2_p = .22$, while a decrease was detected in communication through social networks, $F(1, 855) = 225.29$, $p < .001$, $\eta^2_p = .21$. No significant changes were observed in the frequency of phone calling or meeting in person. Regarding gender differences, girls reported higher frequency than boys in communication by phone call and text messages, in both waves of the study. In time 1, 6.5% of boys frequently made a phone call in time 1 compared to 16.2% of girls ($z = -4.4$, $p < .001$), $\chi^2(2, 849) = 79.38$, $p < .001$. In time 2, the percentage in girls was 15.9% while in boys was 6.6% ($z = -4.3$, $p < .001$), $\chi^2(2, 865) = 51.43$, $p < .001$. Concerning text messaging, girls frequently sent text messages in 49% of cases in time 1 ($z = -4.2$, $p < .001$), $\chi^2(2, 856) = 40.09$, $p < .001$, and 75.4% in time 2 ($z = -2.7$, $p < .001$), $\chi^2(2, 874) = 12.59$, $p = .002$, while these percentage were 34.7% and 67.2% in boys, respectively. No age differences were detected. Furthermore, Table 1 presents frequency distribution of peer relationships and school victimisation variables.

Cross-sectional associations between online/offline communication, quality of peer relationships and school victimisation

Stepwise regression analyses were conducted in order to cross-sectionally explain school exclusion, bullying, exerted bullying, easiness to make friends and resistance to group pressure in time 1, according to gender, age and online/offline communication to talk with friends in time 1. No significant results were found regarding exerted bullying, so that any type of communication, neither online nor offline, was significantly associated ($\Delta F = 1.01$, $p = .404$). Table 2 describes results of significant cross-sectional associations in time 1. Social network communication was negatively
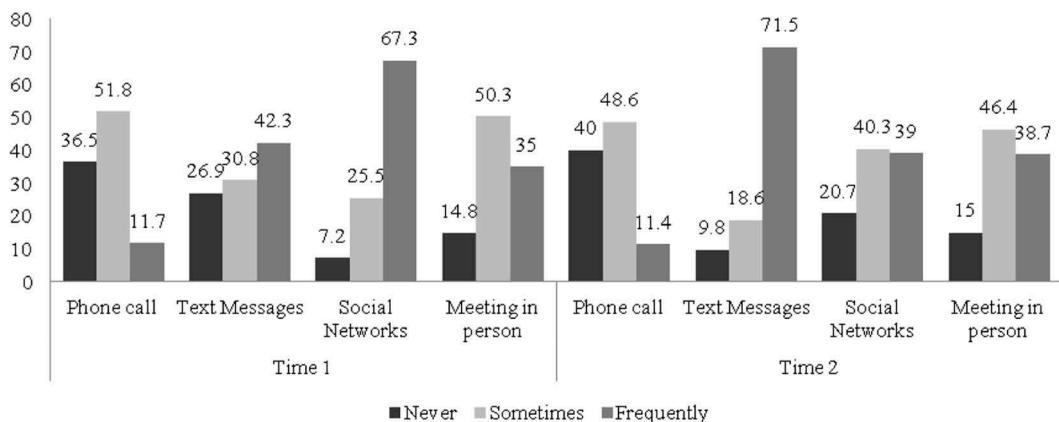

Figure 1. Percentage distribution in the use of online/offline communication means.

Table 1. Percentage distribution of school victimization and peer relationships variables in times 1 and 2.

	Time 1					Time 2				
	Never	Rarely	Occasionally	Frequently		Never	Rarely	Occasionally	Frequently	
School Exclusion	62.5	27.5	7.5	2.5		63	28.1	7.2	1.8	
Bullying	34.7	43	17.5	4.9		42	39.6	15.6	2.8	
Exerted Bullying	46.4	41.9	10.1	1.6		50.1	38.5	9.7	1.7	
	Very difficult	Difficult	Neither easy nor difficult	Easy	Very Easy	Very difficult	Difficult	Neither easy nor difficult	Easy	Very Easy
Easiness to make friends	2.1	4.8	29.1	33.1	30.9	1.6	4.5	31.5	32.9	29.6
	Very difficult	Difficult	Sometimes	Always or almost always		Very difficult	Difficult	Sometimes	Always or almost always	
Resistance to group pressure	3.7	5.5	42.6	48.2		2.1	4.6	37.5	55.8	

Table 2. Stepwise regression analyses of gender, age and online/offline communication in Time 1 as predictors of school victimization and quality of peer relationships in Time 1.

	DV: School Exclusion				DV: Bullying				DV: Easiness to make friends				DV: Resistance to group pressure			
	F	R^2	t	β	F	R^2	t	β	F	R^2	t	β	F	R^2	t	β
Step 1	2.52	.01			4.77**	.01**			.06	.01			2.91	.01		
Gender			−1.54	−.05			−2.75	−.09**			.22	.01			2.11	.07*
Age			−1.72	−.06			−1.58	−.05			.27	.01			1.28	.04
Step 2	5.53***	.04***			6.31***	.04***			5.10***	.04***			2.76*	.02*		
Gender			−.92	−.03			−1.97	−.07*			−1.18	−.04			1.57	.06
Age			−1.88	−.06			−1.42	−.05			.25	.01			1.27	.04
Phone call			−.35	−.01			.88	.03			2.34	.09*			.37	.01
Text messages			−1.48	−.06			−3.52	−.13***			2.38	.09*			.56	.02
Social networks			−4.26	−.15***			−2.54	−.09*			2.70	.10**			2.23	.08*
Meeting in person			−.16	−.01			−1.19	−.04			1.70	.06			2.03	.07*

*p < .05, **p < .01, ***p < .001

associated with school ostracism and bullying, and positively associated with easiness to make friends and resistance to group pressure. Text messaging was negatively related to bullying and positively with easiness to make friends. Regarding offline communication means, phone calling was positively associated with easiness to make friends and meeting in person was also positively related to resistance to group pressure.

Longitudinal associations between online/offline communication, quality of peer relationships and school victimisation

In order to examine prospective associations between the use of the different online/offline communication means to talk with friends and the indicators of peer relationships and school victimisation at Time 2, stepwise regression analyses were conducted. Significant results were only observed regarding bullying and ease of making friends after a one-year follow-up (see Table 3).

Results showed that bullying and easiness to make friends at time 2 were explained by text messaging at time 1 (after controlling initial values in bullying and easiness to make friends in time 1, respectively). Regarding easiness to make friends (see Figure 2), it was observed that in those adolescents who presented more difficulties to make friends in Time 1 (reporting that it was very difficult, difficult or neither easy nor difficult) and frequently communicated by instant text messages, up to 64% reported difficulties to make friends in Time 2, whereas this percentage was 79.6% in adolescents who presented the same difficulties to make friends in Time 1 and never communicated by text messages ($z = 2.5$, $p < .001$). Furthermore, those participants who had difficulties to make friends in time 1 and never used text messages in time 1 reported in 17.3% of cases that they found easy to make friends one-year later, while adolescents with those difficulties in time 1 and a frequent use of text messages in time 1, reported in 28.8% of cases that it was easy for them to make friends ($z = -2.1$, $p < .001$), $\chi^2(4, 297) = 12.74$, $p = .013$. No differences by frequency in text messaging were detected in adolescents who found easy, $\chi^2(4, 271) = 3.37$, $p = .497$, or very easy to make friends, $\chi^2(4, 256) = 3.36$, $p = .500$. Regarding bullying (see Figure 3), results showed that in adolescents who suffer bullying in any type (rarely, occasionally or frequently) in time 1 and frequently used text messages in time 1, 35.4% reported that never suffered bullying in time 2, higher than adolescents who suffer bullying in any type in time 1 and never used text messages in time 1 (20.2%; $z = -3.1$, $p < .001$). Moreover, adolescents who suffered bullying in time 1 and never used text messages in time 1 reported bullying in 79.8% of cases in time 2, while this percentage was 64.6% in adolescents who suffer bullying in time 1 and frequently

Table 3. Stepwise regression analyses of gender, age and online/offline communication in Time 1 as predictors of bullying and easiness to make friends in Time 2, controlling initial values.

|	DV: Bullying T2				DV: Easiness to make friends T2			
	F	R^2	t	β	F	R^2	t	β
Step 1	1.90	.01			.16	.01		
Gender			.29	.01			.30	.01
Age			−1.91	−.07			.49	.02
Step 2	70.89***	.20***			149.82***	.35***		
Gender			1.67	.05			.32	.01
Age			−1.39	−.04			.39	.01
DV T1			14.42	.45***			21.19	.60***
Step 3	32.67***	.22**			65.38***	.36		
Gender			2.24	.07*			−.22	−.01
Age			−1.15	−.04			.16	.01
DV T1			13.68	.43***			20.53	.59***
Phone call			.32	.01			−.18	−.01
Text messages			−3.42	−.12**			2.06	.06*
Social networks			−.02	−.01			−.04	−.01
Meeting in person			−.94	−.03			1.58	.05

*p < .05, **p < .01, ***p < .001
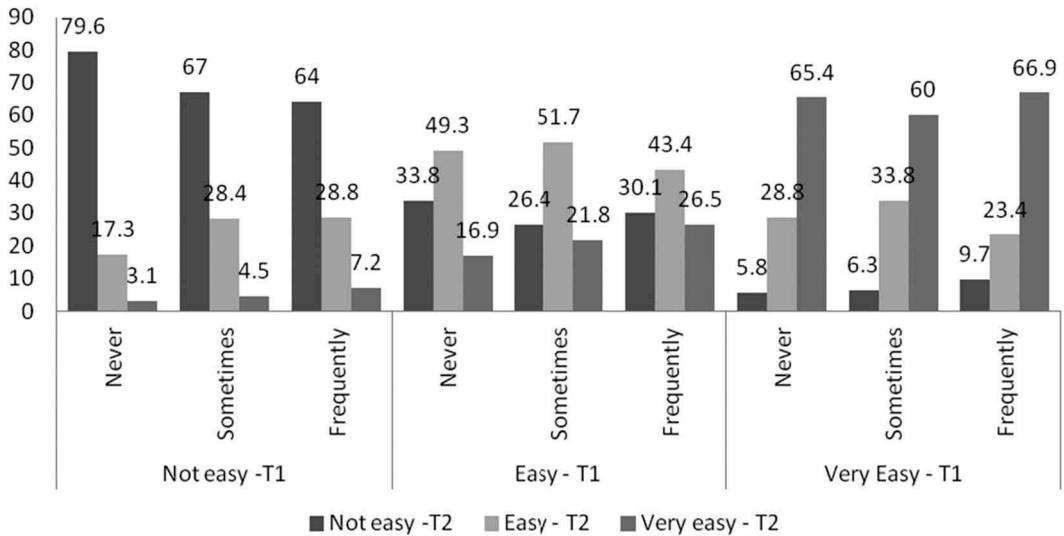
Figure 2. Percentage distribution of ease of making friends in Time 2 (Not easy-T2, Easy-T2 or Very easy-T2), by text messages frequency in Time 1 (Never, Sometimes or Frequently) and ease of making friends in Time 1 (Not easy-T1, Easy-T1 or Very easy-T1).
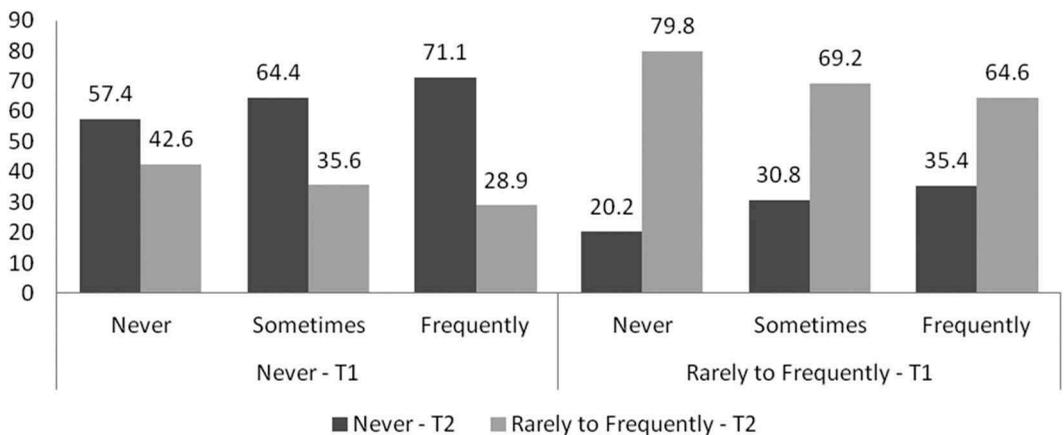

Figure 3. Percentage distribution of suffered bullying in Time 2 (Never-T2 or Rarely to Frequently-T2), by text messages frequency in Time 1 (Never, Sometimes or Frequently) and suffered bullying in Time 1 (Never-T1 or Rarely to Frequently-T1).

communicated by text messages ($z = -2.5$, $p < .001$), $\chi^2(2, 552) = 10.62$, $p = .005$. No differences by text messaging frequency were observed in adolescents who never suffered any kind of bullying in wave 1, $\chi^2(2, 300) = 3.88$, $p = .144$.

Discussion

Regarding the first aim, results underlined that online communication to talk with friends was very frequent in middle adolescence, even more used than offline means, in line with our hypothesis and with data from HBSC study (Matos et al., 2008). Text messaging and social networks were the types of communication preferred by mid-adolescents when they want to talk with their friends. Girls were found to write text messages more frequently than boys, as well as to make phone calls.

Gender differences in online communication were also detected in the latest report from the HBSC study and are in line with we expected (Currie et al., 2012). Age differences were not found in our study, contrary to our hypothesis and conclusions by HBSC study (Currie et al., 2012). Furthermore, our results highlighted that text messaging increased after the one-year follow-up, while the use of social networks declined. It seems that there was a change in the preferred online communication mean, from social networks to text messaging.

Regarding the second aim, cross-sectional and longitudinal associations were observed between online communication to talk with friends and the indicators of peer relationships and school victimisation. Firstly, a higher use of online communication (both by social networks and text messaging) were cross-sectionally associated with less bullying and more easiness to make friends. Moreover, the frequency of the use of social networks was negatively associated with school ostracism and positively associated with resistance to group pressure. Concerning cross-sectional associations with offline communication, a greater frequency of phone calls was associated with more easiness to make friends, and meeting in person more frequently was related to more resistance to group pressure. Secondly, only longitudinal associations were detected between online text messaging, bullying and easiness to make friends. In adolescents who reported in Time 1 more difficulties to make friends and suffered bullying, it was observed that those who more frequently sent instant text messages in Time 1 presented more benefits in social relationships after the one-year follow-up. Thus, in that subsample, adolescents who more frequently used text messages reported less bullying and less difficulty to make friends, compared to those who never wrote instant text messages. No significant associations, neither cross-sectional nor longitudinal, were observed with exerted bullying.

Our results underlined that online communication to talk with friends was cross-sectionally and longitudinally associated with positive implications for peer relationships and school life, rather than offline communication. Consequently, the use of online communication with friends suggests more benefits than risks, as we expected and pointed out recent studies, and in opposition to what was published in the nineties, when perhaps the use of these media was not so frequent (Best et al., 2014; Valkenburg & Peter, 2007). The positive association between online communication and indicators of quality in peer relationships reinforces the results of previous studies (Baker & Oswald, 2010; Blais et al., 2008; Boniel-Nissim et al., 2015; Kuntsche et al., 2009; Valkenburg & Peter, 2007). Our results are also in line with social compensation hypothesis, but contrary to rich-get-richer hypothesis, because social benefits after the follow-up (i.e. more easiness to make friends and no bullying) of frequent text messaging were significantly found only in those adolescents who reported lower easiness to make friends and any type of bullying at the beginning of the study (Lee, 2009; Valkenburg & Peter, 2007). Consequently, it should be highlighted that online communication is a powerful tool that helps adolescents to connect more easily, instead of stimulating loneliness and isolation, with remarkable importance in adolescents with more difficulties in peer relationships.

Perhaps this frequent use of online communication, and the associated positive results in peer relationships, may be due to the accessibility and asynchrony that characterises online media (Valkenburg & Peter, 2009). These features enhance the development of self-presentation and self-revelation skills, which are necessary for the development of personal identity, intimacy and sexuality (Fullwood, James, & Chen-Wilson, 2016; Wang, Jackson, & Zhang, 2011). Furthermore, the association found between a greater use of online communication by text messages and no bullying at school was contrary to the study by Best et al. (2014), which established cyberbullying as a risk factor of online communication, because a greater use of the internet to communicate with friends was associated with a lower risk of bullying in our study. The use of online communication to talk with friends and not to ciberbully may be related to lower experienced school victimisation because bullying and ciberbullying acts as two overlapped manifestations of harassment among peers (Sumter et al., 2012). Perhaps other communicative uses of the internet, such as communicating with strangers, chat rooms or video games, are the ones associated with negative results (Blais et al., 2008; Valkenburg & Peter, 2007). In any case, some precautionary measures or security actions should be taken into account in order to prevent some of the possible risks of internet communication

among children and adolescents, especially where the literature has emphasised some particular risks (Casale & Fioravanti, 2011; Garcia-Piña, 2008; Tzavela et al., 2015; Valkenburg, Peter, & Schouten, 2006; Yang et al., 2014). According to our findings, some interventions could be suggested to improve the quality of peer relationships by the use of electronic communication devices. In this sense, Gross (2009) has experimentally shown that after suffering ostracism at school the use of online communication encourages a significant reduction in negative affect as well as increasing the feeling of being connected with peers. Consequently, school-based media literacy on digital media use in mid-adolescence could be necessary to take advantage of online communication, avoiding risks (Ishii, 2017; Walther, Hanewinkel, & Morgenstern, 2014). The promotion and development of safe spaces for online interactions among middle adolescents can improve the quality of their relationships with their friends and partners. Recently, the Sant Joan de Deu Hospital in Barcelona (Spain) has put together a guide to promote a healthy education in a digital society (Roca, 2015). This guide offers a positive approach to online communication by offering parental advice to accompany and educate their children in a responsible use, acquiring a proactive attitude to improving knowledge about what communication technologies exist and what opportunities and benefits they present, without failing to be aware of the potential risks, in line with Shin and Kang (2016).

Thus, the present study has provided evidence that highlights the benefits of online communication during middle adolescence, as indicated both cross-sectional and longitudinal positive effects on indicators of peer relationships and school life. Specifically, social compensation hypothesis was supported, because a frequent use of text messaging was related to more easiness to make friends and no bullying after the one-year follow-up in those adolescents with more initial difficulties.

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