

Online and Offline Friendship Among Italian Adolescent Girls Following a Non-Traditional School Track

Giulia Zucchetti^{1*}, Fabrizia Giannotta² & Emanuela Rabaglietti¹

¹Department of Psychology, University of Torino, Italy;

²Center for Development Research, Orebro University, Sweden

*Corresponding Author: giulia.zucchetti@unito.it

Abstract

Background: There is still a question of whether online friendship predicts changes in face-to-face friendship (Reduction Hypothesis) or face-to-face friendship predicts changes in online friendship (Compensation Hypothesis) during adolescence.

Objective: The purpose of this study was to compare these two hypotheses to determine which comes first: online friendship or offline friendship.

Method: Eighty adolescent girls between the ages of 14 and 19 years (mean, 16.07 years; standard deviation, 1.28 years) on a non-traditional school track completed self-report questionnaires. Two wave longitudinal models were tested with the use of cross-lagged analysis to compare the hypotheses.

Results: Analysis showed that negative face-to-face friendship quality predicted online friendship but that the opposite was not true.

Conclusions: The study's findings underlined the compensation role of online friendship for girls with poor or unsatisfactory offline social worlds. The implications of this information and suggestions for clinicians and professionals to use to enhance adolescent social skills and to promote appropriate use of the Internet will be discussed.

Key Words: Online friendship; Offline friendship; Adolescence

Introduction

The Internet is becoming a new context in which to develop friendship. In recent years, a growing amount of research has demonstrated that adolescents - especially girls - are involved in online social interactions that often turn into real friendships (1-3). Thus, the number of friendships born via online interaction has grown considerably.

Researchers have postulated two possible explanations for this increase in online friendships. The first relies on the fact that the Internet facilitates communication (4;5). For example, the anonymity and absence of visual contact afforded by online interactions may promote disclosure and the communication of personal emotions among adolescents (1;6). As a result, those adolescents that cannot satisfy their needs for affection and closeness with peers in face-to-face relationships may be more will-

ing to search for new friendships on the Internet (7). Other researchers have claimed that a lack of good relationship with peers is not a cause of online friendship formation but rather a consequence of it. The time spent in online relationships could reduce the time spent in face-to-face interactions. In turn, this reduction of time spent in face-to-face interactions may affect friendship quality. Thus, according to this perspective, a quality reduction of face-to-face friendship will be the natural consequence of an increase of online friendship.

In summary, it is not very clear if the lack of or the quality of face-to-face friendship predicts an increase in online friendship or vice versa. The current research aims to address this issue by comparing the previously mentioned perspectives to investigate the direction of the relationship between offline and online friendship.

Does unsatisfactory face-to-face friendship lead to online friendship formation?

The first theoretical perspective, known as the Social Compensation Hypothesis, argues that, among adolescents, Internet friendship formation is the result of poor or weak face-to-face relationships (8;9). It is already well documented that adolescents need to build and maintain satisfying relationships to explore and resolve their typical developmental tasks, such as the crisis of identity (10;11). Adolescents need to experiment and to compare their own identity with the identities of others to gain autonomy and independence when developing social skills through the construction of close relationships (12-14). Adolescents who are not benefiting from positive and secure friendship may search on the Internet for other ways to make friends to fulfill their social purpose (15). The characteristics of the Internet, such as anonymity and the lack of visual and auditory cues, facilitate the process of self-disclosure; this in turn leads to the formation of new online relationships (16;17). For these adolescents, the online context thus becomes a safe and ideal place in which to explore their identities, develop their social skills, and meet new and accessible friends (3;5;18).

The result of many studies supported the Social Compensation Hypothesis. For example, the study by Campbell and colleagues and the study by Walther revealed that adolescents with poor face-to-face friendship quality benefit from online social communication, which allows them to interact with others more easily than they may in a face-to-face context (8;9). Other researchers pointed out that adolescents who suffer from loneliness and social anxiety tend to turn to online communication (19;20). Valkenburg and Peter have demonstrated that the majority of socially anxious adolescents considered the Internet to be more useful than face-to-face communication for sharing personal and intimate feelings and experiences (2). These types of adolescents in fact have some difficulty building intimate face-to-face friendships and sharing their personal feelings with others. Therefore, they may feel more confident disclosing themselves in the absence of physical interaction. Online interactions can fulfill this need (17). In addition, some studies have shown that adolescents - especially girls - use the Internet for self-disclosure with unknown individuals to compensate for needs that arise from an unsatisfactory offline environment, such as a lack of social closeness to others (7;21;22).

Thus, some evidence suggests that the inadequate development of face-to-face interactions may lead to the formation of online relationships.

Does online friendship formation lead to unsatisfactory face-to-face friendship?

The second theoretical perspective, known as the Reduction Hypothesis, claims that online communication decreases adolescents' face-to-face friendships because it reduces the time that could be spent with existing friends (23-25). Specifically, this hypothesis assumes that the Internet motivates adolescents to form online contacts with strangers rather than to maintain friendships with their face-to-face friends. The time spent with online strangers occurs at the expense of time spent with existing friends and impedes the further development of already existing friendships. Moreover, online relationships with strangers, which are considered to be more superficial than offline relationships, inevitably lead to a reduction of existing friendship quality (26).

Some empirical studies support the idea that online friendship reduces offline friendship. For example, the HomeNet Project found that Internet use was associated with a significant decrease in local social network size as a result of the time adolescents spent communicating online (23). Nie and colleagues also found that greater Internet use was related to less time spent with offline friends (25). Blais and colleagues demonstrated that using the Internet to communicate with strangers reduced the quality of an individual's best face-to-face friendship (27). Specifically, visiting chat rooms was related to increased "alienation and conflict" and decreased "intimacy and companionship" with the best face-to-face friend. Despite the small number of studies in support of the Reduction Hypothesis, there is some evidence that online friendship formation involves the presence of an unsatisfactory face-to-face friendship.

Limitations of previous studies

Despite their significant contributions to the understanding of the association between online and offline friendship, the previously mentioned studies did have some limitations.

First, in the majority of those studies, the reduction in the amount of time spent with face-to-face friends is the unique indicator adopted to study the consequences of online relationships on offline interactions. However, time reduction is not sufficient to account for the negative influence of Internet interactions on existing face-to-face friendships. Scholars have in fact highlighted that there are other salient dimensions, such as friendship quality, that need to be considered when studying adolescent face-to-face friendship (28). Second, to our

knowledge, no studies have investigated both types of relationships to ascertain which hypothesis is the more likely, the Reduction Hypothesis or the Social Compensation Hypothesis. Moreover, no one has investigated the possible reciprocal effects between online and offline friendships.

Another shortcoming of these studies is that the majority of research has looked at the normative adolescent population. It is also important to take into account non-normative adolescents, such as those who have followed a non-traditional school track. The present study involved Italian youth who are on such non-traditional school tracks. In the Italian education system, adolescents are expected to continue to attend school until they are 18 years old. Usually, the majority of Italian adolescents continue within the traditional school system, which provides access to colleges, lyceums, professional schools, and technical schools. Those who do not wish to continue studying are obliged until the age of 18 years to attend vocational schools that are closely related to the learning of a job (e.g., hair-dressing school).

School transition is one of the most challenging and stressful developmental turning points that adolescents must deal with, and it also involves a transformation of school-based social relationships (29). Recent studies have shown that adolescents following non-traditional school tracks, such as those who are attending vocational schools, are more involved in problem behavior as compared with adolescents following normative pathways (30;31). Specifically, students who follow non-traditional school tracks seem to experience a sort of “institutional disadvantage and poor school engagement” (32;33). This disengagement from school likely interferes with an adolescent’s ability to do well both academically and socially (34). According to the transactional model (35;36), poor school engagement (in terms also of low school achievement) and negative peer experiences (e.g., peer victimization, negative friendship quality) are mutually influenced over time. Thus, adolescents who are following these types of school tracks may be more at risk of having difficulties with their social relationships. As a result, they may be more interested in developing online friendships. Moreover, girls who attend vocational schools are more likely to use the Internet for social purposes as compared with boys who attend the same types of school (37). Therefore, it may be important to study the formation of online friendships among girls who attend vocational schools.

The majority of the studies that have considered the possibility that online friendship can reduce the quality of offline friendship were conducted during the early stages of the Internet, when Internet use

was still limited. Today, Internet use is rapidly increasing, and more than half of the Italian population uses the Internet at home for social communication (38). Although Internet use has changed and modern adolescents use the Internet often for communication with their existing friends, online communication with strangers is still a common phenomenon, especially for some type of adolescents and particularly for social compensation (7). In the light of growing Internet use, it may be important to know whether this habit can have a role in the friendship features of adolescents who are more at risk for problem behaviors and who have more difficulties with peer relationships (33), such as those who are on a non-traditional school track.

The present study

The purpose of this study is to compare the Reduction Hypothesis with the Social Compensation Hypothesis and eventually to investigate whether a model of reciprocal influence is likely for a group of girls on a non-traditional school track.

In keeping with the Reduction Hypothesis, we referred to online self-disclosure as one of the components of friendship that can influence the onset of a negative face-to-face friendship quality. Online self-disclosure was defined as one of the most important functions of close adolescent friendships in Internet settings, and it has been investigated in many studies. These studies concluded that online self-disclosure facilitates the formation of online friendships and enhances the quality of online adolescent relationships (2;15;17;18;39). Thus, we focused on this component of friendship when investigating the formation of online friendship among girls. If the Reduction Hypothesis is true, we would expect that the quality of these adolescents’ face-to-face relationships would worsen as a consequence of their disclosure online.

To test the Social Compensation Hypothesis, which postulates that unsatisfactory face-to-face friendship leads to online friendship formation, we focused on a negative component of friendship quality: best-friend conflicts. Indeed, adolescents who are not satisfied with their relationships because of the presence of continuous conflict may search for friends in the online context who are more accessible for the sharing of emotions and feelings. If the Social Compensation Hypothesis is supported, then it would be expected that adolescents would participate in online self-disclosure as a consequence of the negative quality of their face-to-face relationships.

In summary, we compared the four models presented in Figure 1. The first model tested the stability of online self-disclosure and negative face-to-

face friendship quality at two time levels, without cross-lagged paths. The second model tested the effect of online self-disclosure on negative face-to-face friendship quality over time. The third model investigated the effects of negative face-to-face friendship quality on online self-disclosure. The fourth model tested the reciprocal effects of negative face-to-face friendship quality and online self-disclosure over time.

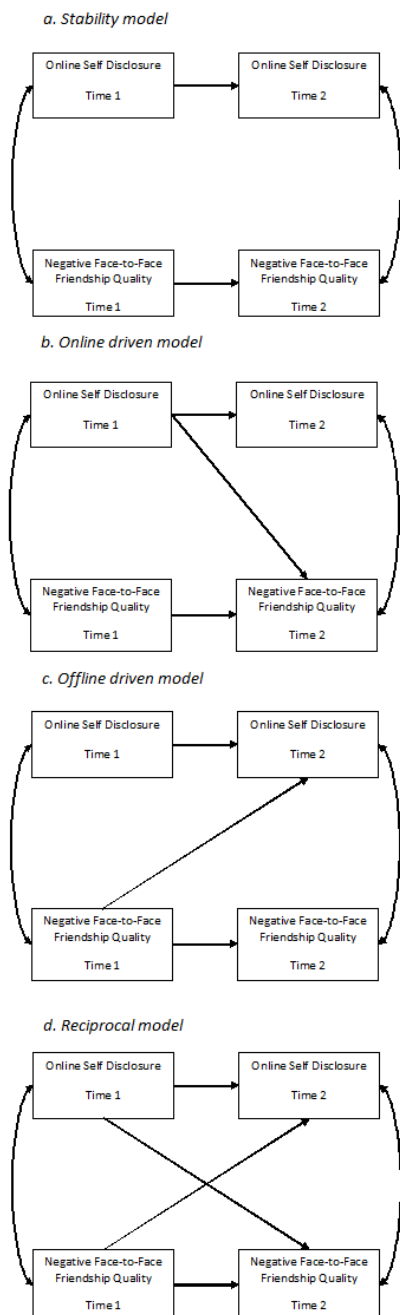


Figure 1. Alternative models for the relationship between Online Self disclosure and Face-to-Face Negative Friendship Quality

To summarize, the research questions addressed by this study were as follows:

- 1) What is the direction of influence between online self-disclosure and negative face-to-face friendship quality among Italian girls following non-conventional school tracks?
- 2) Is there a reciprocal association between online self-disclosure and negative face-to-face friendship quality?

By taking into account the specific characteristics of our sample, which was made up of individuals who may use online communication as a resource to cope with a lack of face-to-face social support, we expected to find support only for the Social Compensation Hypothesis. We believed that we would be dealing with adolescents with high levels of negative face-to-face friendship quality who probably as a result of the presence of online friends with whom it is easy to interact, would be spending an increasing amount of time online disclosing personal information to strangers. Contrary to the social compensation hypothesis and in respect to the reduction hypothesis, we expected to find no relationship from online friendship to offline friendship.

Method

Sample

Participants were 80 adolescent girls between the ages of 14 and 19 years (mean, 16.07 years; standard deviation, 1.28 years) attending the first (41%) and second (59%) years of a vocational school in northern Italy. This vocational school was chosen randomly from among all the vocational schools in the city of Turin with similar conditions in terms of both the socioeconomic levels of the students’ parents and the surrounding ecological environment. Parents provided written consent for minor students to participate in the study, and students who were more than 18 years old assented in accordance with Italian law and the ethical code of the Italian Association of. All students of the selected school joined the research. There was no attrition, because we were able to contact all of the students who were absent during the two sessions of data collection.

According to the Italian Ministry of Instruction, University and Research (40), 120,000 of 600,000 students chose a non-traditional school track in 2013. Regarding relevant structural indicators, our participants appear to be comparable with the general population of Italian students who are on the traditional school track (i.e., the 80% who are attending the lyceum) (38). The proportion of parental divorce was 8%. More than half of the adolescents’ families were composed of four members,

and 30% came from single-parent families. With respect to the level of education of the parents, 47% completed elementary school, 38% completed high school, 6% had some vocational specialization, and 9% were university graduates.

Procedure

Students completed questionnaires that were distributed by trained research staff during classroom time. These questionnaires took approximately 30 minutes for students to complete, and the students were assured of confidentiality and anonymity. Teachers were not present in the classroom during the questionnaire administration, and no incentives were offered for participation.

The two time points at which the questionnaire was administered were approximately one year apart.

Measures

Online self-disclosure

Online self-disclosure was assessed with each questionnaire using Snell, Miller, and Belk's scale (41). This scale is composed of 19 items that reflect an adolescent's ability to reveal his or her emotions to an online stranger friend whom he or she has never met in person. Items were rated on a scale from 1 (never) to 5 (always), with a high score reflecting a strong and frequent ability to self-disclose (e.g., "How many times do you speak about your anxious feelings with an online stranger friend?"). Cronbach's alphas for this scale were 0.91 at Time 1 and 0.93 at Time 2.

Negative face-to-face friendship quality

Participants rated three items taken from the Network Relationship Inventory on a five-point Likert scale of 1 (never) to 5 (always) (11). More precisely, these three items reflected the level of conflict between friends (e.g., "How many times do you and your friend quarrel with each other?"), which reflected the level of negative friendship quality. High scores corresponded with a high level of negative face-to-face friendship quality. Cronbach's alphas for this scale were 0.86 at Time 1 and 0.90 at Time 2.

Statistical analyses

To test the relationship between online self-disclosure and negative face-to-face friendship quality, we used Mplus Version 6 software to run a cross-lagged analysis with a maximum likelihood method, which is recommended when the sample size is small (42). For missing data, we used a full information maximum likelihood approach.

We tested the four nested models that were presented in Figure 1. We compared these nested mod-

els using a chi-squared difference test. With regard to the fit indices, we examined the chi-squared comparative fit index and the standardized root-mean-square residual. A model is considered to fit well when the model's chi-squared distribution is not significant. In addition, a comparative fit index value of 0.95 or higher suggests a good model fit (43). Root mean square error of approximation and standardized root-mean-square residual values of 0.08 or less are expected for an adequate model fit (43).

As a result of the differences between the range of the online self-disclosure scale and those of the friendship scale, the total score of the online self-disclosure scale was divided by a fixed number (i.e., 7) so that the two scales could be compared.

Descriptives

Repeated measures analysis of variance suggested that negative face-to-face friendship quality did not increase significantly from Time 1 to Time 2 ($F[1] = 1,602$, n.s.) (Table 1). In addition, online self-disclosure did not increase significantly from Time 1 to Time 2 ($F[1] = 1,268$, n.s.).

Table 1. Intercorrelations among, means and standard deviation of Online Self-Disclosure and Negative Face-to-Face Friendship Quality

	1	2	3	4
1. OSD (Wave 1)	--			
2. NFQ (Wave 1)	.44**	--		
3. OSD (Wave 2)	.25**	.24*	--	
4. NFQ (Wave 2)	.20**	.24**	.23**	--
<i>M</i>	41.4	8.12	40.4	8.32
<i>SD</i>	4.49	2.40	4.8	4.63

Note: $n=80$

* $p < .05$; ** $p < .01$

OSD = Online Self-Disclosure

NFQ = Negative Face-to-Face Friendship Quality

Negative face-to-face friendship quality and online self-disclosure

We tested the four models that were presented in Figure 1. As seen in Table 2, the offline driven model was significantly different from the stability model, whereas the online model was not. As in the online driven model, online self-disclosure did not predict negative face-to-face friendship quality; we did not test the reciprocal model against online self-disclosure and negative face-to-face friendship quality. In conclusion, these findings suggest that the offline driven model represented the relationship between online self-disclosure and negative face-to-face friendship quality.

Table 2. Model fit for competitive models

Model	χ^2	df	<i>p</i>	CFI	SRMR	Model comparison	$\Delta\chi^2$	df	<i>p</i>
A. Stability model	6.039	2	.04	.80	.76				
B. Online driven	3.735	1	.05	.87	.059	A	2.304	1	.06
C. Offline driven	2.306	1	.13	.95	.042	A	5.803	1	.01

Figure 2 shows the structural part of the model. In the offline driven model, the findings suggested that both negative face-to-face friendship quality and online self-disclosure were relatively stable from Time 1 to Time 2 ($\beta = 0.41$ and $\beta = 0.23$, respectively; $P < .05$). Negative face-to-face friendship quality at Time 1 predicted online self-disclosure at Time 2 ($\beta = 0.21$; $P < .05$) when controlling for online self-disclosure at Time 1, which suggests that high levels of negative face-to-face friendship quality were associated with high levels of online self-disclosure 1 year later.

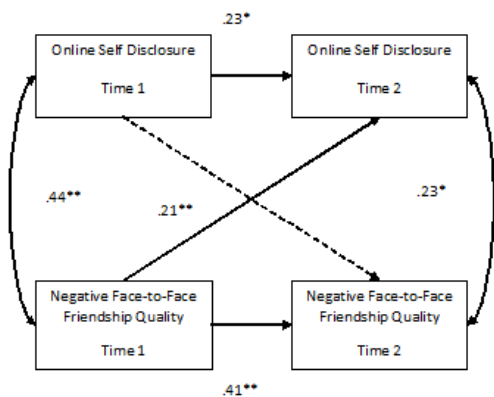


Figure 2. Structural model of the effects of Negative Face-To-Face Friendship Quality on Online Self Disclosure

Discussion

The goals of the present study were to compare the Reduction Hypothesis and the Social Compensation Hypothesis and to investigate whether a model of reciprocal influence was likely among a group of girls following a non-traditional school track.

We found support for the Social Compensation Theory. Indeed, the offline driven model best represented the relationship between negative face-to-face friendship quality and online self-disclosure. The fact emerged that, when adolescents experience

many conflicts in their face-to-face friendships, they are more likely to increase online self-disclosure. As stated previously, the presence of an unsatisfactory face-to-face social world, which is characterized by poor close friendships in terms of best-friend conflicts, can make it difficult for some adolescents to share experiences and emotions with peers and lead them to search for new unknown friends through the Internet. In this study, we found that negative face-to-face friendship quality was associated with online self-disclosure over time. These results are in line with those of several other studies that have shown that adolescents use the Internet as a relatively safe place in which they can rehearse their self-disclosure and self-presentation skills (44;45). However, our study also demonstrated that conflict with face-to-face best friends triggers this online self-disclosure. The online interactions provide compensation for problematic relationships with peers by offering a context in which adolescents can self-disclose without feeling forced to reciprocate information and in which they can remain as anonymous as they like.

We found that this result also holds true with adolescents on a non-traditional school track. Because the literature has shown that adolescents’ disengagement from school is often associated with a major risk of developing peer victimization problems and peer impairments (35;36), we may hypothesize that the compensation mechanism is stronger for those who are less involved in school and who attend vocational schools as compared with normative youths. This hypothesis should be tested in other studies.

One possible reason that adolescents who have conflictual relationships with peers prefer online self-disclosure may reside with the features of this type of communication. Online communication is typically characterized by reduced visual (e.g., appearance) and auditory (e.g., voice) cues (9). An important consequence of these reduced cues when

communicating online is that adolescents who have conflictual relationships with peers and who probably feel more isolated and lonely may become less concerned about how others perceive them and thus may have fewer inhibitions when disclosing themselves (9;46-48). Especially among depressed and paranoid adolescents, however, this lack of visual and auditory cues could increase negative false perceptions about the way others perceive them. These hypotheses should be considered and tested in studies that also take into account the roles of the characteristics of online communication.

The compensation mechanism that emerges from our results does not necessarily give a negative connotation to online friendships. On the one hand, the Internet may offer new opportunities for socialization among adolescents who have problems with face-to-face relationships; this may in turn fulfill their needs for significant relationships. On the other hand, this mechanism may become negative when it leads to the creation of online friendships only. Youths who prefer online friendships may have more tension in their best face-to-face friendships; they may spend less enjoyable time with friends and thus have increased feelings of "alienation and conflict" within those friendships over time, as was shown in a study by Blais and colleagues (27).

We did not find support for the Reduction Hypothesis. Indeed, adolescents' online self-disclosure was not associated with an increase in the negative aspects of adolescent friendships. However, we did not examine the quantity of time that adolescents spent on the Internet but only the quality of this time. It is possible that the creation of new friendships on the Internet - when this is not a consequence of negative face-to-face relationships - may directly decrease only the time spent with offline friends (as shown by Kraut and colleagues and Nie and colleagues) and not the quality of those offline relationships (23;25). Thus, it would be necessary to take into account different aspects of online communication, such as its quantity and quality, to completely confute the Reduction Hypothesis.

Some limitations of this explorative study should be highlighted. The most important is its small sample size, which makes it difficult to generalize results to larger contexts. Moreover, the size of our sample and the fact that it contained only girls did not allow for the division of the sample according to age or gender to see whether the same relationships hold for both subsamples. Many studies have demonstrated differences between boys and girls with regard to online and offline friendships, although studies that tested the Social Compensation Hypothesis did not find support for gender differ-

ences (5;7;24;44;45). Thus, future research with a larger sample that includes both boys and girls is needed. In the present study, we considered only online self-disclosure and did not look at other aspects of online communication, such as the time spent performing such communication. Although online communication is itself a multidimensional concept, we referred to online self-disclosure as the most important aspect for understanding online friendship formation and friendship in general, as other authors have shown (28,49).

Despite these limitations, this study also has several strengths. It compared for the first time the Reduction Hypothesis and the Social Compensation Hypothesis. It demonstrated that the relationship between negative face-to-face friendship and online self-disclosure may be represented properly, as the Social Compensation Hypothesis stated, with a direct association between negative face-to-face friendship quality and online self-disclosure. Moreover, it extended the investigation of this relationship to adolescent girls following a non-traditional school track. As previously stated, in recent years, many Italian adolescents have chosen such a track. Prior work has shown that Italian adolescents enrolled on a non-tradition school track have some problems with social development: they seem to have more difficulty building positive and secure social relationships with peers, preferring instead to socialize with friends with whom they share similar at-risk behaviors and activities (50-52). Our results in part confirm this line of research and demonstrate that the presence of an unsatisfactory face-to-face social world, which is characterized by poor close friendships in terms of best-friend conflicts, leads adolescent girls to search for emotional support on the Internet.

The results of the current study may have important clinical relevance for the planning of school-based interventions in Italy, especially among adolescents enrolled on non-traditional school tracks, by suggesting the introduction of interventions that are aimed at teaching strategies for the management and resolution of conflicts. An intervention that is aimed at improving these abilities may also enhance adolescents' social skills as well as the quality of their friendships. Activities aimed at instructing adolescents about the safe and correct use of the Internet may be structured and added to the proposed interventions. Future research could also take into account adolescents who suffer from certain developmental disorders (e.g., attention-deficit/hyperactivity disorder, autism) during the development of any new assessments or treatments that may better address both offline and online relationships. Future studies could also consider the

role of positive face-to-face friendship quality to further deepen the process of online friendship formation during adolescence.

This study clarified some of the processes underlying the growing use of the Internet by adolescents in recent years. Examining the role of these mechanisms may be useful to better understand how online communication could have a positive and favorable impact on adolescents' development and how it could help adolescents to compensate for difficulties related to their own internal and external worlds.

References

- Subrahmanyam K, Smahel D, Greenfield P. Connecting developmental constructions to the Internet: identity presentation and sexual exploration in online teen chat rooms. *Dev Psychol* 2006;42(3):395-406.
- Valkenburg P, Peter J. Adolescents' online communication and their closeness to friends. *Dev Psychol* 2007;43(2):267-77.
- Wolak J, Mitchell KJ, Finkelhor D. Escaping or connecting? Characteristics of youth who form close online relationships. *J Adolescence* 2003;26:105-19.
- Subrahmanyam K, Greenfield P, Kraut R, Gross E. The impact of computer use on children's and adolescents' development. *J Appl Dev Psychol* 2001;22:7-30.
- Valkenburg PM, Schouten AP, Peter J. Adolescents' identity experiments on the Internet. *New Media Soc* 2005;7:383-402.
- Lenhart A, Rainie L, Lewis O. Teenage life online: the rise of the instant-message generation and the Internet's impact of friendships and family relationships. Washington, D.C.: Pew Internet & American Life Project; 2001.
- Gross EF. Adolescent Internet use: what we expect, what teens report. *J Appl Dev Psychol* 2004;25:633-49.
- Campbell AJ, Cumming SR, Hughes I. Internet use by the socially fearful: addiction or therapy? *CyberPsychol Behav* 2006;9:69-81.
- Walther JB. Computer-mediated communication: impersonal, interpersonal, and hyperpersonal interaction. *Commun Res* 1996;23(1):3-43.
- Erikson E. *Childhood and Society*. 2nd ed. New York, NY: Norton; 1963.
- Furman W, Buhrmester D. Age and sex differences in perceptions of networks of personal relationships. *Child Dev* 1992;63:103-15.
- Arnett JJ. Young people's conceptions of the transition to adulthood. *Youth Soc* 1997;29:1-23.
- Berndt TJ, Hawkins JA, Jiao Z. Influences of friends and friendships on adjustment to junior high school. *Merrill-Palmer Quart* 2005;45:13-41.
- Tomada G, Schneider BH, de Domini P, Greenman PS, Fonzi A. Friendship as a predictor of adjustment following a transition to formal academic instruction and evaluation. *Int J Behav Dev* 2005;29:314-22.
- McKenna KYA, Bargh J. Plan 9 from cyberspace: the implications of the Internet for personality and social psychology. *Pers Soc Psychol Rev* 2000;4:57-75.
- Bargh JA, McKenna KYA, Fitzsimons GM. Can you see the real me? Activation and expression of the "true self" on the Internet. *J Soc Issues* 2002;58(1):33-48.
- McKenna KYA, Green AS, Gleason MEJ. Relationship formation on the Internet: What's the big attraction? *J Soc Issues* 2002;58(1):9-31.
- Peter J, Valkenburg PM, Schouten AP. Developing a model of adolescent friendship formation on the Internet. *CyberPsychol Behav* 2005;8:423-30.
- Gross EF, Juvonen J, Gable SL. Internet use and well-being in adolescence. *J Soc Issues* 2002;58(1):75-90.
- Kraut R, Kiesler S, Boneva B, Cummings JN, Helgeson V, Crawford AM. Internet paradox revisited. *J Soc Issues* 2002;58:49-74.
- Galambos NL. Gender and gender role development in adolescence. In: Lerner RM, Steinberg L, editors. *Handbook of adolescent psychology*. Hoboken, NJ: Wiley; 2004. p. 233-62.
- Schouten A, Valkenburg PM, Peter J. Precursors and underlying processes of adolescents' online self-disclosure: developing and testing an "internet-attribute-perception" model. *Media Psychol* 2007;10:292-315.
- Kraut R, Patterson M, Lundmark V, Kiesler S, Mukophadhyay T, Scherlis W. Internet paradox: a social technology that reduces social involvement and psychological well-being? *Am Psychol* 1998;53:1017-31.
- Nie NH, Erbring L. Internet and society: a preliminary report. *IT & Society* 2000; 1(1):275-83.
- Nie NH, Hillygus DS, Erbring L. Internet Use, interpersonal relations, and sociability: a time diary study. In: Wellman B, Haythornthwaite C, editors. *The Internet in Everyday Life*. Malden: Blackwell Publishers Ltd; 2002. p. 215-43.
- Locke JL. *The de-voicing of society: Why we don't talk to each other anymore*. New York, NY: Simon & Schuster; 1998.
- Blais JJ, Craig WM, Pepler D, Connolly J. Adolescents online: the importance of Internet activity choices to salient relationships. *J Youth Adolesc*. 2008;37:522-36.
- Berndt TJ. Friendship quality and social development. *Curr Dir Psychol Sci* 2002;11:7-10.
- Eccles JS, Wigfield A, Flanagan C, Miller C, Reuman D, Yee D. Self-concepts, domain values, and self-esteem: relations and changes at early adolescence. *J Pers* 1989;57:283-310.
- Romero E, Luengo MA, Sobral J. Personality and antisocial behaviour: study of temperamental dimensions. *Pers Individ Differ*. 2001;31:329-48.
- Weerman FM. Juvenile offending. In: Tonry M, Bijleveld C, editors. *Crime and justice in the Netherlands: crime & justice: a review of research*, Vol. 35. Chicago: University of Chicago Press; 2007. p. 261-318.
- Duncan GJ. What to make of "unexpected" pathways? *J Soc Issues* 2008;64:213-17.
- Neuenschwander MP, Garrett JL. Causes and consequences of unexpected educational transitions in Switzerland. *J Soc Issues*. 2008;64:41-57.
- Wentzel KR. Social-motivational processes and interpersonal relationships: implications for understanding students' academic success. *J Educ Psychol* 1999; 91:76-97.
- Véronneau MH, Vitaro F. Social experience with peers and high school graduation: a review of theoretical and empirical research. *Educ Psychol* 2007;27:419-45.

36. Wentzel KR. Peer relationships, motivation, and academic performance at school. In: Elliot A, Dweck C, editors. *Handbook of Competence and Motivation*. New York: Guilford; 2005. p. 279-96.
37. National Institute of Educational System Evaluation for Instruction and Formation (INVALSI). [Accessed 2013 May 2]. Available from www.invalsi.it.
38. Istituto Nazionale di Statistica (ISTAT). *Italy in figures 2012*. [Accessed 2013 May 2]. Available from www.istat.it/it/archivio/30329.
39. Mesch G. A study of adolescents' online and offline social relationships. Oxford Internet Institute, Research Report No. 8, [Accessed June 2012] Available from: <http://ssrn.com/abstract=1308494>
40. Ministero Istruzione Università e Ricerca (MIUR). Focus pubblica amministrazione. [Accessed 2013 May 2]. Available from www.hubmiur.pubblica.istruzione.it.
41. Snell WE Jr, Miller RS, Belk SS. Development of the emotional self-disclosure scale. *Sex Roles* 1988;18:59-74.
42. Olsson UH, Foss T, Troye SV, Howell RD. The performance of ML, GLS, and WLS estimation in structural equation modeling under conditions of misspecification and non-normality. *Struct Equ Modeling* 2000;7:557-95.
43. Hu L, Bentler PM. Fit indices in covariance structure modeling: sensitivity to underparameterized model misspecification. *Psychol Meth* 1988;3(4):424-53.
44. Valkenburg PM, Sumter SR, Peter J. Gender differences in online and offline self-disclosure in pre-adolescence and adolescence. *Brit J Dev Psychol* 2011;29:253-69.
45. Valkenburg PM, Peter J. Adolescents' identity experiments on the Internet: consequences for social competence and self-concept unity. *Commun Res* 2008;35:208-31.
46. Joinson AN. Self-disclosure in computer-mediated communication: the role of self-awareness and visual anonymity. *Eur J Soc Psychol* 2001;31:177-92.
47. Tidwell LC, Walther JB. Computer-mediated communication effects on disclosure, impressions, and interpersonal evaluations. *Hum Commun Res* 2002;28:317-48.
48. Zucchetti G, Rabaglietti E, Latina D, Ciairano S. Online and offline self disclosure and psychological discomfort in adolescence: exploring the mediation effect of face to face friendship quality. *J Dev Psychol* 2012; 73-83.
49. Rose AJ. Co-rumination in the friendships of girls and boys. *Child Dev* 2002;73:1830-43
50. Bonino S, Cattellino E, Ciairano S. *Adolescenti e Rischio*. Firenze: Giunti Editore; 2007.
51. Marmocchi P. *Nuove generazioni. Genere, sessualità e rischio tra gli adolescenti di origine straniera*. Franco Angeli Edizioni; 2012.
52. Rabaglietti E, Burk WJ, Giletta M. Regulatory self-efficacy as a moderator of peer socialization relating to Italian adolescents' alcohol intoxication. *Soc Dev* 2012;21:522-36.