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Escaping or connecting? Characteristics of youth who form close online relationships

Janis Wolak*, Kimberly J. Mitchell, David Finkelhor

Crimes against Children Research Center, University of New Hampshire, 126 Horton Hall, Durham, NH 03824, USA

Abstract

We used data from a US national sample of Internet users, ages 10–17 ($N = 1501$), to explore the characteristics of youth who had formed close relationships with people they met on the Internet ($n = 210$). Girls who had high levels of conflict with parents or were highly troubled were more likely than other girls to have close online relationships, as were boys who had low levels of communication with parents or were highly troubled, compared to other boys. Age, race and aspects of Internet use were also related. We know little about the nature or quality of the close online relationships, but youth with these sorts of problems may be more vulnerable to online exploitation and to other possible ill effects of online relationships. At the same time, these relationships may have helpful aspects.
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Keywords: Adolescent friendships; Internet; Cyberspace; Online relationships

1. Introduction

Online relationships are a new phenomenon, but they have already become part of adolescent culture. Psychologists have theorized about the meaning of online relationships during adolescence (Turkle, 1995; Freeman-Longo, 2000), and law enforcement agents have warned about the dangers of sexually exploitative online relationships (Armagh, Battaglia, & Lanning, 1999). Internet safety information aimed at teens tacitly acknowledges the extent of these relationships by offering safety rules for conducting them and for attending face-to-face meetings with online friends (Magid, 1998; Aftab, 2000). A national survey by these authors confirmed the frequency of online relationships, finding that 25% of Internet users ages 10–17 had formed casual online friendships in the year before they were interviewed, and 14% had formed close online

*Corresponding author. Tel.: +1-603-862-4691; fax: +1-603-862-1122.
E-mail address: janis.wolak@unh.edu (J. Wolak).

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friendships or online romances (Wolak, Mitchell, & Finkelhor, 2002). In fact, adolescents may be especially drawn to online relationships because of their intense interest in forming relationships, and because the expansiveness of cyberspace frees them from some of the constraints of adolescence by giving them easy access to a world beyond that of their families, schools and communities.

Much of the popular commentary about teens online suggests that the Internet is universally interesting to youth (i.e. Tapscott, 1998). If this is so, it would seem that forming online relationships might be one of the most generally appealing aspects of Internet use among young people, given that forming relationships is a developmental imperative of adolescence. We were interested in whether online relationships such as close friendships and romances were spread evenly throughout the population of youth online or whether they were more common among some segments of youth Internet users. In fact, knowing if some youth are more likely than others to be involved in online relationships could be seen as a first step in learning about the impact online relationships may be having among adolescents. There has been little empirical data about the characteristics of adolescents who form online relationships. We used data from a national sample of youth Internet users to explore the associations between forming close online relationships and a number of problems common among adolescents, including being highly troubled, reporting high levels of parent–child conflict, low levels of communication with parents, and high levels of delinquency, along with demographic characteristics and aspects of Internet use. We conducted separate analyses for girls and for boys because of theories that suggest the qualities of close relationships differ between girls and boys and meet different social needs (Gilligan, 1982; Buhrmester, 1996).

2. Method

The Youth Internet Safety Survey used telephone interviews to gather information from a national sample of 1501 Internet-using young people, ages 10–17. "Internet use" was operationalized as going online at least once a month for the past 6 months on a computer at home, a school, a library, someone else's home, or some other place. Telephone numbers of households with children in the target age group were identified through another large national survey with which these researchers were involved. This was the Second National Incidence Study of Missing, Abducted, Runaway and Thrownaway Children, NISMART 2, a survey of over 16,000 households with children, which was conducted between February and December 1999. Further information about the methodologies of both NISMART 2 and the Youth Internet Safety Survey can be found in a previous report (Finkelhor, Mitchell, & Wolak, 2000).

The interviews for the Youth Internet Safety Survey were conducted between August 1999 and February 2000, by experienced professional interviewers. Upon reaching a household, an interviewer speaking with an adult screened for the requisite level of Internet use by a 10–17-year-old youth in the household. When an eligible youth was identified, the interviewer conducted a short interview with the parent or caretaker who knew the most about the youth's Internet use and then asked for permission to speak with the youth. In families where more than one youth had the requisite level of Internet use, the youth with the most use was chosen. In cases of equal Internet use, the youth with the most recent birthday was chosen. When parental consent was

given, the interviewer spoke with the youth, confirmed his or her level of Internet use, described the survey and obtained the youth's consent. Youth interviews lasted from about 15 to 30 minutes. They were scheduled at the convenience of youth participants and arranged for times when they could talk freely and confidentially. Youth respondents received brochures about Internet safety and $10.

2.1. Participation rate

Seventy-five per cent of the households approached completed the screening necessary to determine their eligibility for participation in the survey. The completion rate among households with eligible respondents was 82%. Five per cent of parents in eligible households refused the adult interview. Another 11% of parents completed the adult interview but refused permission for their child to participate in the youth interview. In 2% of eligible households, parents consented to the youth interview, but youth refused to participate.

2.2. Sample

The final sample consisted of 1501 youth (boys = 790, girls = 708). The mean age was 14.14 years (S.D = 1.96). Table 1 further describes the demographic characteristics of the sample.

2.3. Instrumentation

The data used in this paper come from the youth interview, except for the demographic data, which come from the parent interview, with the exception of information about race. The purpose of the Youth Internet Safety Survey was to assess how often young people encounter unwanted sexual solicitations, pornography and harassment online. The youth interview included questions about the existence of close online relationships because some adolescent Internet users have been sexually solicited in the context of these relationships. The youth interview also covered delinquent behaviour, drug and alcohol use, depression, parent–child relationships, conventional victimization, and other similar questions. The questions referred to events that happened "in the past year," except for the questions about symptoms of depression, which referred to the past month.

Dependent variable: Youth were asked two questions about relationships initiated online, that were used to define *close online relationships*. These questions were formulated after we held a series of focus groups with youth Internet users and learned that youth distinguished between casual online friendships that involved liking a person they had met online, and closer friendships or romances which involved more intimate exchanges. The first question asked, "Have you had a *close friendship* with someone you met on the Internet who you didn't know in person? I mean someone you could talk online with about things that were real important to you?" The second one asked, "Have you had a *romantic online relationship* with someone you met on the Internet? I mean someone who felt like a boyfriend or girlfriend." Youth who answered "yes" to either of these questions were considered to have established close online relationships. (Detailed descriptive information about the online relationships, including data about face-to-face meetings, is reported in Wolak, et al., 2002.)

Table 1
Youth and household characteristics

Characteristic	All youth ($N = 1501$)	Youth with close online relationships ($n = 210$)
Gender		
Male	53%	46%
Female	47%	53%
Age		
10	4%	2%
11	8%	3%
12	11%	5%
13	15%	12%
14	16%	16%
15	18%	25%
16	17%	19%
17	13%	18%
Mean age	14.14	14.78
Lives with both biological parents	64%	62%
Highest educational level of an adult in household		
Not HS graduate	2%	2%
HS graduate	21%	22%
Some college	22%	27%
College graduate	31%	32%
Post-college degree	22%	16%
Household income		
<$20,000	8%	9%
$20,000 to $50,000	38%	39%
>$50,000 to $75,000	23%	25%
>$75,000	23%	21%
Type of community		
Large city	14%	14%
Suburb of large city	21%	17%
Large town	15%	16%
Small town	28%	35%
Rural area	20%	17%
Race		
Non-hispanic white	73%	81%
African American	10%	7%
American Indian or Alaskan native	3%	1%
Asian	3%	1%
Hispanic white	2%	3%
Other	7%	6%
Do not know/refused	2%	1%

Note: Some categories do not add to 100% due to rounding and/or missing data.

Independent variables: Aside from demographic characteristics, most of the independent variables are composites derived from factor analysis loadings (see Table 2). These composites identify youth who were *highly troubled*, reported *high parent–child conflict* or *low communication with parents*, or who engaged in a *high degree of delinquent behaviour*. Two variables described Internet use, having *home Internet access* and a composite indicating *high Internet use*. We dichotomized the composite variables, for two reasons. First, dichotomous variables create clear categories — troubled girls, for example — as opposed to a scale with a range of degrees of a characteristic. Second, they allow the use of logistic regression odds ratios that can be discussed in terms of relative risk.

2.4. Statistical analysis

Bivariate analyses: A series of Pearson chi-square tests and relative risk estimates were used in two series of comparisons. First, we compared the characteristics of youth Internet users who had

Table 2
Construction of composite independent variables

Composite variable	Factor loading	Eigenvalue	Variance
High parent–child conflict[a]			
Parent:			
Yells	0.81		
Takes away privileges	0.62		
Nags	0.75	1.6	0.53
Low communication with parent[b]			
How often parent knows:			
Where youth is	0.88		
Who youth is with	0.88	1.5	0.77
High degree of delinquent behaviour[c]			
Above average use of alcohol or drugs (4 + times/yr)	0.80		
At least one delinquent behavior[d]	0.80	1.3	0.64
Highly troubled[c]			
High depression (5 + symptoms)	0.69		
Physical or sexual assault, past year	0.68		
At least one negative life event[e]	0.55	1.2	0.41
High Internet use[a]			
Above average or expert user	0.71		
Internet very or extremely important	0.57		
Online 4 + days/week	0.68		
Online 2 + hours/day	0.49	1.5	0.38

[a] Youth with scores more than 1 S.D. above the mean are coded as having this characteristic; others are coded as zero.
[b] Youth with scores more than 1 S.D. below the mean are coded as having this characteristic; others are coded as zero.
[c] Youth with scores more than 2 S.D. above the mean are coded as having this characteristic; others are coded as zero.
[d] Delinquent behaviours include being picked up by the police, assault, vandalism and theft.
[e] Negative life events include death of a family member, moving, divorce or separation, parent job loss.

established close online relationships to those who had not. Then we compared the characteristics of girls who formed close online relationships with girls who did not and made a similar comparison for boys.

Multivariate analyses: Finally, we conducted two logistic regressions, one for girls and one for boys, to further test the associations of adolescent problems, characteristics of Internet use, and age and race to close online relationships among each gender. In both the bivariate analyses and logistic regressions, odds ratios were adjusted to derive estimates of associations that closely represent the relative risk (Zhang, 1998).

3. Results

Fourteen per cent of youth ($n = 205$) reported close online *friendships* and 2% ($n = 30$) reported online *romances*. Overall, 14% of youth ($n = 210$) reported close online *relationships*, because some youth ($n = 25$) reported both friendships and romances. Girls were slightly more likely than boys to have close online relationships (16% of girls *vs.* 12% of boys, $p = 0.05$, O.R. = 1.3, C.I = 1.0–1.8).

3.1. Bivariate associations of characteristics with close online relationships

In bivariate analyses, a disproportionate number of adolescents with close online relationships were highly troubled, reported high amounts of conflict with their parents, low communication with parents and engaged in high levels of delinquency (see Table 3). Youth with these relationships also were more likely to be high school age (14–17), non-Hispanic white, report high levels of Internet use and have home Internet access.

Because theories about adolescent relationships suggest girls and boys pursue close relationships in different manners and for different reasons, we looked at the associations between the characteristics described above and close online relationships separately, for both genders, and found that variations emerged (see Table 4). Because of this, separate logistic regressions were done for girls and boys. Table 5 shows the correlations among the variables used in the regression equations for girls and for boys.

3.2. Logistic regression for girls

The initial regression model included all of the variables listed in Table 4. The final model indicates that five variables were related to forming close online relationships among girls (see Table 6). Age was the only related demographic characteristic. Girls who were *aged 14–17* were about twice as likely as girls who were 10–13 to form these kinds of relationships. Because close relationships are an important developmental aspect of older adolescence, the high school age girls probably had more interest in close online relationships and were less supervised and more independent, with more freedom to pursue their online interests.

Two problem characteristics were associated with close online relationships, *high parent–child conflict* and being *highly troubled*. The highly troubled girls had levels of depression, victimization (mostly physical assaults by peers), and troubling life events at least two standard deviations

Table 3
Characteristics of youth Internet users with close online relationships compared to those who do not have close online relationships

Characteristic	Close online relationships ($N = 210$)	N[a]	Adjusted odds ratio	95% confidence interval
Demographic				
Age				
Ages 10–13	8%	558		
Ages 14–17	17%	942	2.3***	1.6–3.2
Race	9%	373		
Minority	15%	1128		
White			1.8**	1.2–2.6
Gender				
Female	16%	708	1.3*	1.0–1.8
Male	12%	790		
Problems				
High parent–child conflict				
No	12%	1204		
Yes	25%	276	2.5***	1.8–3.4
Low communication with parent				
No	13%	1333		
Yes	26%	163	2.5***	1.7–3.7
High degree of delinquency				
No	13%	1418		
Yes	28%	83	2.5***	1.5–4.2
Highly troubled				
No	12%	1270		
Yes	23%	231	2.2***	1.5–3.1
Internet use				
High level of Internet use				
No	9%	1091		
Yes	29%	410	2.4***,b	2.1–2.8
Home Internet access				
No	7%	392		
Yes	16%	1109	1.2***,b	1.1–1.3

*$p \leqslant 0.05$, **$p \leqslant 0.01$, ***$p \leqslant 0.001$.
[a] $N = 1501$, but data is missing for some variables.
[b] Adjusted to correct for over-estimation of risk, including C.I.

Table 4
Characteristics of girls with close online relationships compared to other girls, and boys compared to other boys

Characteristic	Girls close online relationships ($N=112$)	N^a	Odds ratio	95% confidence interval	Boys close online relationships ($N=97$)	N^a	Odds ratio	95% confidence interval
Demographic								
Age								
Ages 10–13	8%	280			9%	276		
Ages 14–17	21%	428	1.4***,a	1.2–1.5	14%	513	1.7*	1.1–2.8
Race								
Minority	12%	167			7%	206		
White	17%	541	n.s.	—	14%	584	2.1**	1.2–3.7
PROBLEMS								
High parent–child conflict								
No	12%	578			11%	624		
Yes	34%	126	2.7***,b	2.0–3.5	17%	149	n.s.	—
Low communication with parent								
No	15%	657			10%	674		
Yes	33%	49	2.8***	1.5–5.3	24%	113	2.3***,b	1.5–3.1
High degree of delinquency								
No	15%	677			11%	739		
Yes	26%	31	n.s.	—	27%	51	3.0***	1.5–5.8
Highly troubled								
No	13%	604			11%	664		
Yes	30%	104	2.3***,b	1.6–3.1	18%	126	1.8*	1.1–3.0
Internet use								
High level of internet use								
No	9%	529			7%	559		
Yes	35%	179	2.8***,b	2.3–3.3	24%	231	2.2***,b	1.8–2.6
Home internet access								
No	8%	191			5%	199		
Yes	19%	517	1.2***,b	1.1–1.3	15%	591	1.2***,b	1.1–1.3

*$p \leqslant 0.05$, **$p \leqslant 0.01$, ***$p \leqslant 0.001$

[a] $N=1501$ for entire sample, but $n=708$ for girls and $n=790$ for boys because gender is missing in three cases. Missing data causes some other variations in numbers of cases.

[b] Adjusted to correct for over-estimation of risk, including C.I.

Table 5
Pearson correlations among variables associated with close online relationships for girls and for boys

	1	2	3	4	5	6	7	8
Girls								
1. Close online relationship	1.000							
2. Older than 13	0.169**	1.000						
3. White	0.059	0.068	1.000					
4. Conflict with parents	0.233**	0.102**	−0.118**	1.000				
5. Highly troubled	0.159**	−0.007	−0.023	0.108**	1.000			
6. Low communication	0.125**	0.095*	−0.006	0.222**	0.108**	1.000		
7. Highly delinquent	0.059	0.145**	−0.011	0.153**	0.165**	0.349**	1.000	
8. High Internet use	0.300**	0.151**	0.017	0.144**	0.062	0.020	0.098**	1.000
9. Home Internet access	0.124**	0.075*	0.180**	−0.011	−0.089*	−0.009	−0.025	0.185**
Boys	1.	2.	3.	4.	5.	6.	7.	8.
1. Close online relationship	1.000							
2. Older than 13	0.080*	1.000						
3. White	0.090*	0.072*	1.000					
4. Conflict with parents	0.065	0.036	−0.096**	1.000				
5. Highly troubled	0.079*	0.015	−0.056	0.117**	1.000			
6. Low communication	0.146**	0.129**	−0.047	0.141**	0.010	1.000		
7. Highly delinquent	0.121**	0.139**	0.027	0.121**	0.153**	0.172**	1.000	
8. High Internet use	0.226**	0.139**	0.033	0.117**	0.039	0.040	0.080*	1.000
9. Home Internet access	0.119**	0.054	0.127**	−0.026	−0.098**	−0.020	0.058	0.213**

*$p \leqslant 0.05$; **$p \leqslant 0.01$.

higher than the other girls in the sample. Girls with high levels of parent–child conflict reported yelling, nagging and taking away privileges by parents at a level at least one standard deviation higher than other girls. Girls in either of these categories were more than twice as likely as other girls to have formed close online relationships.

Two variables, *low communication with parents* and *being highly delinquent*, were not significantly associated with close online relationships when other variables were controlled for. The delinquency variable was not significant at the bivariate level among girls. The variable denoting low communication was significant in bivariate analyses, but a relatively small number of girls reported this characteristic, which was significantly intercorrelated with parent–child conflict and being highly troubled. Shared variance with significantly related variables probably accounts for this characteristic's lack of significance in the regression.

Finally, and not surprisingly, Internet use and access were strongly associated with close online relationships. Girls who reported high levels of Internet use were more likely than other girls to report these relationships, as were girls with home Internet access, even controlling for high levels of Internet use.

3.3. Logistic regression for boys

In the final regression model for boys, five variables were significantly associated with close online relationships, *being non-Hispanic white*, *low communication with parents*, *being highly*

Table 6
Logistic regressions of characteristics associated with close online relationships among girls ($n = 702$) and among boys ($n = 786$)

Characteristic	Girls				Boys			
	B	Sig.	Odds ratio	95% confidence interval	*B*	Sig.	Odds ratio	95% confidence interval
Demographic								
Older than 13	0.830	0.002	2.3	1.3–3.9	0.273	0.304	—	—
Minority	−0.470	0.116	—	—	−0.745	0.017	0.5	0.3–0.9
Problems								
High parent–child conflict	1.179	0.000	2.5[a]	1.7–3.3	—	—	—	—
Highly troubled	1.044	0.000	2.3[a]	1.5–3.3	0.636	0.025	1.9	1.1–3.3
Low communication with parents	—	—	—	—	1.064	0.000	2.3[a]	1.6–3.3
Highly delinquent	—	—	—	—	—	—	—	—
Internet use								
High Internet use	1.325	0.000	2.4[a]	1.9–3.0	1.210	0.000	2.1[a]	1.7–2.5
Home Internet access	0.732	0.022	2.1	1.1–3.9	0.763	0.030	2.1	1.1–4.3
−2 log likelihood				506.069				514.768
Model chi-square				110.859***				68.698***
R^2 (Cox & Snell)				0.146				0.084
R^2 (Nagelkerke)				0.250				0.160

***$p \leqslant 0.001$.
[a] Adjusted to correct for over-estimation of risk, including confidence interval.

troubled, high Internet use, and *home Internet access* (see Table 6). However, the overall regression model was considerably weaker for boys, explaining only about half the variance that was explained by the model for girls.

Boys who belonged to minority racial and ethnic groups were about half as likely to have close online relationships as boys who identified themselves as non-Hispanic white. Internet access is less pervasive among minorities (Becker, 2000) and is probably less a part of teen culture in these groups.

The problem characteristic most strongly associated with close online relationships among boys was low communication with parents. The boys in this category reported their parents knew where they were and who they were with at levels one standard deviation or more below what was average for other youth in the sample. This characteristic was significantly correlated with the other problem characteristics, with the exception of being highly troubled (see Table 5). Being highly troubled was also related to forming close online relationships among boys as it was among girls.

As among girls, home Internet access and high levels of Internet use were related, independently of each other, to forming close online relationships among boys. Home Internet access may facilitate online relationships even for youth who do not spend large amounts of time online. However, high levels of Internet use should not be interpreted as excessive Internet use. We did not attempt to assess Internet "addiction" or excessive use. Rather, we used the factor loadings for variables related to Internet use to create three composites which divided the sample into three groups of high, moderate and low Internet users (see Table 2). Nonetheless, 75% of youth in the high Internet use category were online four or more days per week, and 72% were online for more than 2 hours on a typical day when they went online.

3.4. *Differences in close online relationships between youth with problems and youth without*

Online relationships could be a source of support and comfort for youth who are troubled or have poor relationships with parents, but these relationships could also pose risks or potentially aggravate the difficulties faced by these young people. Our data allowed for a limited set of comparisons between the close online relationships of youth with problems *vs.* those without, and these comparisons suggest the former's relationships might be more risk prone. For example, youth with problems were more likely to have formed romantic relationships (19% *vs.* 8%, $p = 0.03$, O.R. = 1.9, C.I. = 1.1–2.8), to have been asked by online friends for face-to-face meetings (22% *vs.* 11%, $p = 0.05$, O.R. = 2.2, C.I. = 1.0–4.7), and to have attended face-to-face meetings with online friends (30% *vs.* 18%, $p = 0.05$, O.R. = 1.9, C.I. = 1.0–3.7). Among a subset of 48 youth who had attended face-to-face meetings with online friends, there were no significant differences between youth with problems *vs.* those without, but there was a trend toward youth with problems *not* telling their parents prior to face-to-face meetings (44% *vs.* 26%) and reporting that the person they met did not look as expected (28% *vs.* 11%). The patterns were similar for boys and girls when they were looked at separately, although the smaller sample size did not allow for statistical comparisons.

4. Discussion

Adolescent difficulties were prominent among the characteristics that predicted close online relationships among youth Internet users. For girls and boys both, being highly troubled

(a composite variable which included high levels of depression and peer victimization) was associated. Alienation from parents was also a factor for both genders, manifested among girls as high levels of conflict with parents and among boys as low levels of communication. Demographic characteristics and aspects of Internet use were associated too. Being ages 14–17, rather than younger (ages 10–13), predicted close online relationships among girls. Race was a differentiating characteristic among boys, with close online relationships less common among minority group members. Also, girls and boys who had home Internet access or who reported high levels of Internet use were more likely than other adolescents to form these relationships.

Should the higher rate of close online relationships among adolescents who are troubled and/or alienated from their parents be a cause for concern? The personal needs perspective on adolescent friendship suggests that adolescents form relationships to meet compelling needs for intimacy, self-validation and companionship (Buhrmester, 1996). It may be that adolescents who are troubled or alienated from their parents have more difficulties satisfying friendship needs through face-to-face relationships and that, for some, the Internet provides an alternative. If this is so, it is not necessarily a problem. The Internet may be a source of positive social support and connection for some adolescents, for example youth with disabilities (Hasselbring & Glaser, 2000). However, young people who turn to online relationships because they feel isolated from peers may find that close online relationships are fraught with complications (Egan, 2000). There are several reasons to feel concerned about adolescents with depressive symptoms and difficulties in their face-to-face relationships forming close relationships online.

Vulnerability to victimization: Adolescents who are troubled or who have difficult relationships with their parents may be more vulnerable to online exploitation. From other research, we know that youth who suffer from prior victimization and depression are more vulnerable to conventional sexual and physical assaults (Boney-McCoy & Finkelhor, 1995), and anecdotal evidence from law enforcement sources suggests troubled adolescents are targets of sexual offenders who use the Internet to make contact with victims (Lanning, 1998). None of the young people we interviewed reported being assaulted or harmed as a result of an online relationship. However, adolescents with problems who go online may lack the protective networks of other adolescents. Youth who communicate well with their friends and family have people to talk with about online encounters. They can get advise about behaviour they find weird or unnerving, and develop a sense of appropriate and inappropriate online behaviour. They may be more realistic about the qualities and motives of the people they encounter online, and more likely to follow Internet safety rules. Youth with problems may be less likely to get good advice and feedback. They may be searching for closeness online, and prone to fantasize unrealistically about people they meet in cyberspace and to be overly trusting. These concerns are somewhat borne out by our finding that youth with problems showed a trend toward more online romances and face-to-face meetings without telling parents.

Poor relationships: Short of being victimized in online relationships, youth with problems may be more likely to have unsatisfying online relationships. They may have less experience with positive relationships and be more naive about what they can expect from online friends. This concern is somewhat supported by our finding that youth with problems who attended face-to-face meetings showed a trend to say their online friends looked different than expected. Also, online relationships offer an anonymity that allows participants to engage in deception and maliciousness without the consequences that occur in face-to-face relationships. Masquerading online may be harmless fun for many youth, but adolescents who are relying on online

relationships to fill a void in their lives may find the deceptions of online relationships difficult to understand, confusing and painful (Turkle, 1995). We do not mean to suggest that supportive, healthy online relationships are impossible. For example, one troubled girl in our sample had formed what appeared to be a helpful relationship with an adult woman in a chat room sponsored by a well-known self-help group. For youth who feel cut off from healthy peer and familial relationships, online relationships may provide a substitute, but these relationships may exacerbate problems, at least in some cases.

Increases in depression: Because depression was a component of the composite variable for troubled youth, our findings suggest that depressed youth may be turning to online relationships. There is some evidence from a longitudinal study that Internet use is associated with modest increases in depression and loneliness and small declines in communications with family members among non-depressed users (Kraut, Patterson, Lundmark, Kiesler, Mukopadhyay, & Scherlis, 1998). Whether depressed or alienated youth are more susceptible to any depressive or other isolating effects of Internet use is an important question. Further, rates of depression are high among adolescents who lack social support (Schraedley, Gotlib, & Hayward, 1999). While we did not have any measures of offline social support, it is certainly possible that loneliness is associated both with depression and with forming close online relationships for some youth.

Amplification of alienation: Another important question is whether online relationships may amplify alienation among troubled youth by encouraging racism, fascination with violence and other antisocial attitudes. Many "hate sites" exist online, and youth have easy access to them. These sites often include chat rooms and bulletin boards where relationships can form. Some participants may identify strongly with these sorts of virtual groups, and they may feel validated and encouraged to act on that identity in their real-life interactions (McKenna & Bargh, 1998). Further, it seems alienation may be magnified if troubled young people are forming relationships with other troubled young people.

While we cannot conclude from this cross-sectional data that young people with problems are *drawn* to the Internet, these findings provide some reason to speculate that cyberspace is serving as an alternative venue for forming relationships disproportionately among adolescents who are alienated from their peers or parents, and that more well-adjusted youth may have less need for this venue. Nonetheless, although we can posit reasons to be uneasy about these findings, it is important not to overstate the associations we found or exaggerate their implications. Obviously, online relationships and the youth forming them are extremely diverse. Online relationships could be positive influences on many of the youth who participate in them. Some of these youth may be highly troubled, but they may also be chatting online with teenagers across the country about mutual interests in music or hockey. Youth with problems may find constructive advice online. Teens with difficulties may use online relationships as temporary bridges that bring them into comfortable and supportive face-to-face relationships. Moreover, even if the online relationships of troubled youth pose risks and challenges, these may be less in degree or seriousness than the relationships they form offline, about which we gathered no information.

4.1. Limitations of the survey

This is among the first data from a national sample of youth Internet users to examine the characteristics of adolescents who have formed close online relationships. However, there are a

number of limitations to these findings. First, the data is cross-sectional. There was no way to sequence the events we looked at, so we do not know whether problems reported by youth occurred before, during or after the close online relationships. Also, although our composite measures captured young people who displayed high levels of difficulties, we do not know whether these were long-term or transient problems. Further, the Youth Internet Safety Survey was not primarily designed to collect data about close online relationships, so measures of constructs like social support and data about offline friendships and romantic relationships, which would have been included had the study been so designed, were not available. We used shortened measures of some constructs to keep the telephone interview from becoming unacceptably long, and this may have weakened our analyses in some respects. Also, research about youth Internet use is a new undertaking. Procedures for inquiring about this realm have not been standardized or validated, and this study did not use measures of online relationships or Internet use that had been evaluated or validated in other research. Also, because the dependent variables were based solely on the self-reports of youth respondents, the amount of variance explained by them may be inflated due to shared source variance. Finally, we can not be sure the youth who participated in the survey were fully candid, and, in terms of the sample, some youth declined or were barred by their parents from participating, and we do not know whether their inclusion would have changed the results.

4.2. Recommendations

We hope our findings will generate awareness of and interest in close online relationships among youth by people who work with young people. Cyberspace is an actual, active and eventful place for youth, and should be treated as such. The 14% of Internet-using young people who had formed close online relationships in this survey in the past year could translate to millions of youth involved in these relationships during their adolescent years.

Our findings that disproportionate numbers of troubled youth were involved in close online relationships gives some empirical support to worries that vulnerable youth may be more attracted to these relationships. Concern about online relationships has been high among law enforcement agencies who are dealing with cases where the Internet has been used to sexually exploit young people. People who work with troubled youth should be conscious of the role the Internet may play in their lives and should ask the youth about their Internet use and prompt them to talk about online relationships they may be involved in. Also, education for youth and parents about Internet use should include discussions of these relationships. Parents should be urged to ask about online relationships, just like they ask about their children's face-to-face friends and acquaintances.

This area is ripe for research. Online relationships are accessible to increasing numbers of young people. The lack of face-to-face contact is a unique element in these relationships. The rapid growth of Internet use makes it likely close online relationships will become an enduring part of our social landscape, and young people, who are both fascinated with and naive at forming relationships may be particularly drawn to these relationships. Research that looks at the nature and quality of online relationships, especially in vulnerable groups, and that compares online relationships with face-to-face relationships among youth is greatly needed. It is likely these relationships have both risks and benefits, and we should start the work of figuring out what these are.

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References

Aftab, P. (2000). *The parent's guide to protecting your children in cyberspace*. New York: McGraw-Hill.

Armagh, D., Battaglia, N. L., & Lanning, K. V. (1999). *Use of computers in the sexual exploitation of children* (NCJ 170021). Washington, DC: US Department of Justice, Office of Justice Programs.

Becker, H. J. (2000). Who's wired and who's not: Children's access to and use of computer technology. *The Future of Children: Children and Computer Technology*, *10*(2), 44–75.

Boney-McCoy, S., & Finkelhor, D. (1995). Prior victimization: A risk factor for child sexual abuse and for PTSD-related symptomatology among sexually abused youth. *Child Abuse & Neglect*, *19*(12), 1401–1421.

Buhrmester, D. (1996). Need fulfilment, interpersonal competence, and the develpmental contexts of early adolescent friendship. In W. M. Bukowski, A. F. Newcomb, & W. W. Hartup (Eds.), *The company they keep: Friendship in childhood and adolescence* (pp. 158–185). Cambridge: Cambridge University Press.

Egan, J. (2000). Lonely gay teen seeking same. *New York Times Magazine*, *110*. http://www.nytimes.com/library/magazine/home/2001zlomag-online.htm

Finkelhor, D., Mitchell, K. J., & Wolak, J. (2000). *Online victimization: A report on the nation's youth (6-00-020)*. Alexandria, VA: National Center for Missing & Exploited Children.

Freeman-Longo, R. E. (2000). Children, teens and sex on the Internet. *Sexual Addiction & Compulsivity*, *7*, 75–90.

Gilligan, C. (1982). *In a different voicePsychological theory and women's development*. Cambridge, MA: Harvard University Press.

Hasselbring, T. G., & Glaser, C. H. W. (2000). Use of computer technology to help students with special needs. *The Future of Children: Children and Computer Technology*, *10*(2), 102–122.

Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist*, *53*(9), 1017–1031.

Lanning, K. V. (1998). Cyber "pedophiles": A behavioral perspective. *The APSAC Advisor*, *11*(4), 12–18.

Magid, L. J. (1998). *Teen safety on the information highway*. Alexandria, VA: National Center for Missing & Exploited Children. Available: www.missingkids.com [2001, May 31].

McKenna, K. Y., & Bargh, J. A. (1998). Coming out in the age of the Internet: Identity "demarginalization" through virtual group participation. *Journal of Personality and Social Psychology*, *75*(3), 681–694.

Schraedley, P. K., Gotlib, I. H., & Hayward, C. (1999). Gender differences in correlates of depressive symptoms in adolescents. *Journal of Adolescent Health*, *25*, 98–108.

Tapscott, D. (1998). *Growing up digital: the rise of the net generation*. New York: McGraw-Hill.

Turkle, S. (1995). *Life on the screen: identity in the age of the internet*. New York: Simon & Schuster.

Wolak, J., Mitchell, K. M., & Finkelhor, D. (2002). Close online relationships in a national sample of adolescence. *Adolescence*, *37*(147), 441–455.

Zhang, J. (1998). What's the relative risk? A method of correcting the odds ratio in cohort studies of common outcomes. *Journal of the American Medical Association*, *280*(19), 1690–1691.