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# The Therapeutic Value of Adolescents' Blogging About Social–Emotional Difficulties

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Research shows that writing a personal diary is a valuable therapeutic means for relieving emotional distress and promoting well-being, and that diary writing during adolescence helps in coping with developmental challenges. Current technologies and cultural trends make it possible and normative to publish personal diaries on the Internet through blogs—interactive, online forms of the traditional personal diary. We examined the therapeutic value of blogging for adolescents who experience social–emotional difficulties. The field experiment included randomly assigned adolescents, preassessed as having social–emotional difficulties, to 6 groups (26–28 participants in each): Four groups were assigned to blogging (writing about their difficulties or free writing; either open or closed to responses), a group assigned to writing a diary on personal computers, and a no-treatment control group. Participants in the 5 writing groups were instructed to post messages at least twice a week over 10 weeks. Outcome measures included scales of social–emotional difficulties and self-esteem, a social activities checklist, and textual analyses of participants' posts. Measurement took place at pre- and postintervention and at follow-up 2 months later. Results showed that participants maintaining a blog significantly improved on all measures. Participants writing about their difficulties in blogs open to responses gained the most. These results were consistent in the follow-up evaluation.

*Keywords:* cyberspace, blog, adolescents, social–emotional difficulties, expressive writing

Various psychological approaches have identified the therapeutic qualities that expressive writing encompasses. It has been suggested that writing allows and promotes important psychological factors, such as ventilation and catharsis, self-talk and awareness, and distancing and organization of thoughts (Kerner & Fitzpatrick, 2007; Pennebaker, 2004; Wright & Chung, 2001). In addition, writing involves an element of interpersonal dialogue that can clarify social abilities and reflect the writer's behavior in relationships (Daiute & Buteau, 2002). Research in the field of therapeutic writing usually examines the influence of the writing content on the writer. In such research, the author is commonly asked to write for 15–45 min, once a day, over

a period of several weeks, during which s/he is instructed to write on feelings and thoughts—usually negative—that arise after experiencing a devastating experience (e.g., Low, Stanton, Bower, & Gyllenhammer, 2010; Smyth, Hockemeyer, & Tulloch, 2008). Generally, findings show that such premeditated writing has positive therapeutic effects in feeling some relief and enhancing positive emotions and optimistic thoughts (Esterling, L'Abate, Murray, & Pennebaker, 1999; Pennebaker & Chung, 2007; Pennebaker, Mayne, & Francis, 1997; Pennebaker & Seagal, 1999).

During adolescence, teens are engaged in forming their position in society and in developing social connections with their peers. The transition from childhood to adolescence can place adolescents socially in a distressful and unstable status (Steinberg, 2008). Consequently, the content of adolescents' diary writing reflects for the most part social interactions and values. For instance, in attempting to characterize how adolescents socially conduct themselves, Jensen-Campbell and Graziano (2000) analyzed participants' diary writings over a

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2-week period and found that 30% of adolescents' daily interactions included confrontations and conflicts with others. Because writing involves an element of emotional venting and problem solving, it consequently influences the emotional state, as well as the social behavior, of the writer. Indeed, in a meta-analytical study, Smyth (1998) showed that young people can greatly benefit from writing, perhaps more than adults. That study also found that teens' writing frequently brought up subjects that bothered them at the time and that social isolation and loneliness were common topics. Nevertheless, it should be noted that writing among adolescents is not necessarily a result of social difficulties, but a way in which they cope with numerous developmental challenges (Seiffge-Krenke, 1997).

The emergence of Internet-based communication has brought about flourishing writing opportunities with unique characteristics. Communication in cyberspace—the virtual social environment created by the Internet—exists mainly through written texts. The sense of anonymity and invisibility experienced by Internet users promotes their confidence to express thoughts and feelings. Furthermore, users do not feel committed to the offline social codes—including attire, nonverbal gestures, and eye contact—when interacting online with other people; therefore, they can pay more attention to written content and to themselves. These characteristics induce the therapeutic value of venting emotions and releasing pressure (Suler, 2010). Such disclosures may subsequently enhance a writer's feelings of well-being (Ko & Kuo, 2009). Online writing enables free expression, easy rereading and editing, and convenient (synchronous or asynchronous) communication with others (individually or collectively). Consequently, such psychologically relevant processes as personal reflection (Sharma, 2010) and interpersonal projections (Nagel & Anthony, 2009; Suler, 2010; Turkle, 2004) are common and frequently produce various emotions and behaviors. By exploiting the therapeutic value of writing—in addition to other factors related to online communication—online therapy has emerged as a feasible treatment procedure; it can act as a legitimate alternative or a complementary procedure to traditional, face-to-face approaches (Anthony, Nagel, & Goss,

2010; Barak, Hen, Boniel-Nissim, & Shapira, 2008; Barak, Proudfoot, & Klein, 2009).

In addition to the therapeutic implications of writing, open online communication is also susceptible to interpersonal influence. As a virtual social environment, cyberspace serves as an interpersonal meeting place in which users communicate and socialize with one another and, frequently, look for help or offer support. In this regard, research shows that people characterized by various kinds of social difficulties reveal a higher motivation for Internet use (Amichai-Hamburger, 2007; Amichai-Hamburger & Vinitzky, 2010; Amichai-Hamburger, Wainapel, & Fox, 2002). Activity on the Internet contributes to widening the circle of friends and acquaintances both in cyberspace and in the physical environment. Many Internet users prefer and enjoy the former over the latter, as the virtual environment gives them a feeling of privacy and a sense of protection from exposure, stigma, or physical contact, which might be threatening in face-to-face encounters (Bargh, McKenna, & Fitzsimons, 2002).

A blog (short for Weblog) is one of the places in cyberspace that allows personal writing and interpersonal contacts controlled by the blog owner. It is a personal Website, usually open to visitors' responses, in which bloggers post messages by choice (Gurak & Antonijevic, 2008). Personal motivations to maintain a blog range from professional purposes to personal needs to express and share private experiences that are usually empowered by publicity, scope of readership, and social interaction capabilities, as well as the positive psychological effects of writing (Ekdale, Namkoong, Fung, & Perlmutter, 2010; Guadagno, Okdie, & Eno, 2008; Gurak & Antonijevic, 2008; Hollenbaugh, 2010; Lu & Hsiao, 2009). Many adolescents turn to blogging—sometimes through emerging social networks—as this form of writing allows them to search for their "voice" in both the personal and interpersonal context (Anderson-Butcher et al., 2010). Consequently, blogging creates a social framework within which self-awareness and self-consciousness may develop (Davis, 2010; Scheidt, 2006). In addition, blogs can serve as an efficient vehicle for interpersonal interactions in communicating with a large social audience, as well as friends and family (Scheidt, 2006; Stefanone & Jang, 2008). Online interactivity could thus serve as a special

source for support, strengthen feelings of belonging, and reinforce social skills (Ko & Kuo, 2009). It should be noted, however, that there are possible negative aspects of adolescents' blogging and affiliating to online communities that have to do with personal privacy and security, inappropriate exposures, and risky and unhealthy social influences (Child & Agyeman-Budu, 2010; Greenfield & Yan, 2006; Subrahmanyam & Šmahel, 2011; Whitlock, Powers, & Eckenrode, 2006).

The purpose of the present study was to examine the degree to which adolescents experiencing social-emotional difficulties could affect psychologically relevant outcomes by maintaining a blog over a limited period and by controlling the focus of writing and readers' responses. Specifically, we hypothesized that socially distressed adolescents, through writing on topics of personal distress (vs. general topics) and allowing interactivity (vs. blocking readers' responses), would increase self-esteem and social behaviors and decrease the level of their emotional distress.

## Method

### Participants

To select participants who suffer from social difficulties, we administered the Index of Peer Relationship (IPR) to 1,365 adolescents (ages 14–17) in 14 randomly chosen high schools who volunteered to fill out the questionnaires. The participants were approached by volunteering research assistant teens who asked their peers to fill out the IPR. Participants who scored lower than a standard deviation of the scale mean (a score of 89 or less;  $n = 225$ ) and who did not own a blog but were interested in initiating one were invited to participate in the study. A total of 161 adolescents met these standards and were willing to take part: 124 girls and 37 boys (mean age = 15.50 years,  $SD = 1.02$ ). The participants were randomly assigned to one of six groups, four of which involved blogs: (1) writing about their social difficulties in a blog open to responses ( $n = 26$ ; 22 girls, 4 boys; mean age = 15.65 years,  $SD = 1.03$ ); (2) writing about their social difficulties in a blog closed to responses ( $n = 27$ ; 23 girls, 4 boys; mean age = 15.44 years;  $SD = 1.07$ ); (3) writing about general subjects

in a blog open to responses ( $n = 28$ ; 21 girls, 7 boys; mean age = 15.52 years;  $SD = 1.08$ ); (4) writing about general subjects in a blog closed to responses ( $n = 27$ ; 19 girls, 8 boys; mean age = 15.53 years,  $SD = 1.05$ ); (5) writing a private diary on a personal computer about their social difficulties ( $n = 26$ ; 20 girls, 6 boys; mean age = 15.59 years,  $SD = 0.94$ ); and (6) no-writing control group ( $n = 27$ ; 19 girls, 8 boys; mean age = 15.47 years,  $SD = 0.96$ ).

### Instruments

#### Self-Esteem Scale (SES; Rosenberg, 1965).

This questionnaire was used to measure participants' self-esteem. The questionnaire consisted of 10 items that measured responders' feelings about themselves on a 4-point scale (1 = *strongly agree*; 4 = *strongly disagree*); for example, "On the whole, I am satisfied with myself"; "All in all, I am inclined to feel that I am a failure." After reversing several items, responses were summed to compute the total score, which could range from 10 (very low self-esteem) to 40 (very high self-esteem). The SES was administered before, immediately after, and 2 months following the intervention. Internal consistency (Cronbach's alpha) for the first administration was found to be .88.

#### Index of Peer Relationship (IPR; Hudson, 1982).

This self-report questionnaire was used to assess the level of participants' social-emotional distress. The questionnaire included 25 items, to which participants were asked to respond on a 5-point Likert scale (1 = *not frequently or never*; 5 = *always*) that referred to feelings regarding the quality of their peer relations; for example, "I really like my present peer group," "My peers think I am important to them." Total scale score was calculated by summing items, after reversing negative items; scores ranged from 25 to 125. The IPR, too, was administered before, immediately after, and 2 months following the intervention. Hudson (1982) reported an alpha coefficient of .95 and cited various findings that supported the scale validity. In the present study, the alpha coefficient was .95 too.

#### Interpersonal Activities Checklist (IAC).

To assess the level of social behaviors that participants engaged in, we developed a self-report index. This instrument, which consisted of a list of interpersonal behaviors, was based

on a pilot survey of 35 adolescents (ages 14–17) who were asked to list their routine social behaviors. The final list, consisting of the 30 most common behaviors, appeared in random order; participants were asked to mark the degree to which they took part in each on a 4-point scale (1 = *rarely or never*; 4 = *very frequently or always*); for example, “Listen to music with friends,” “Visit at a friend’s home.” The total score, calculated by summing the responses to all items, ranged from 30 (least interpersonal behaviors) to 120 (most interpersonal behaviors). Again, the participants filled out the questionnaire before, immediately after, and 2 months following the intervention. Cronbach’s alpha after the first administration was .91.

#### **Judgment of social–emotional condition.**

Four experts (master’s or doctoral degree holders, experienced in counseling and psychology) practiced as judges in evaluating the participants’ social–emotional condition through reading their blog posts. The judges used a scale that was developed on the basis of research concerning adolescent social–emotional difficulties (Hartup & Stevens, 1999; Steinberg, 2008) and that ranged from a negative to a positive social–emotional condition. At the low (negative) extreme, writing characterized by descriptions of personal problems and dissatisfaction related to interpersonal relationships; a desire for satisfying interpersonal relationships; low self-esteem and negative self-evaluation in regard to social environment; loneliness, social rejection, and isolation; lack of social interactions, closeness, or intimacy; and unsuccessful interpersonal conflict management. At the high (positive) extreme, writing was characterized by expressions of satisfaction with social connections; closeness, intimacy, and trust with friends; collaborative and mutual interpersonal activities; high self-esteem and high self-evaluation of the social environment; and popularity and active engagement in friendships. The judges rated the social–emotional condition on a 5-point scale (1 = *highly negative social–emotional condition*; 5 = *highly positive social–emotional condition*).

The judges first took part in an evaluation workshop in which they received the definitions and explanations of the rating scale, discussed it, and reached common agreement, using actual participants’ posts (which were not included in the final evaluations). On completion of the

workshop, the judges independently rated 30 posts (not included in the study) and reached a coefficient of concordance (Kendall’s *W*) of .69. When computed for the final research sample, the coefficient of concordance was found to be .85. For the final rating of participants’ social–emotional state, we used the mean scores of the four judges.

Prior to rating participants’ writings, the judges were given a sample of posts for evaluation that were taken from the four blogging groups. The sample included two random posts from the first week of blogging, two random posts from the fifth week, and two random posts from the 10th week for each participant in each group. In all, 509 posts were presented to the judges. The posts were presented in random order and without any information that might disclose the type of experimental group or the point in time (pre-, post-, or follow-up) when the posts were selected.

To construct a single score of social–emotional feeling for each point in time, we averaged the ratings given for each of the two texts by the four judges, and the two mean scores were summed (for each point in time separately). In cases of one text per point in time, the average score was doubled. In that manner, each participant received one score for each point in time, reflecting his or her social–emotional status at that time.

#### **Procedure**

The preliminary group of participants was provided with a letter to parents, explaining the general nature of the project and asked for their consent. Participants whose parents refused were excluded from the study. The questionnaires were administered to participants, in all stages and measurement points of the study, via a dedicated Website (through SurveyMonkey.com). The participants were instructed to fill out the forms at home in privacy at a time of their convenience.

The participants of the five writing groups were instructed to post messages according their respective group condition over the course of 10 weeks. The blogs were publicly opened for reading and managed under nicknames in a dedicated blog portal carried over 100,000 personal blogs. Posts were read and responded to (where responses were enabled) by any readers

as they wished, reflecting regular and typical experiences in the blogosphere. To further reflect normal blogging experience for participants, it was up to them to share (or not to share) with others about their blogs as long as their personal identity was not revealed. As the study focused on the very blogging experience, number and content of readers' responses (where enabled) were not used for the testing of hypotheses.

Participants in the first group were asked to post messages in their blogs on their thoughts and feelings concerning their social circumstances and interpersonal relationships. Participants in this group were aware of the fact that responses to their messages were possible and were instructed to read and respond to them as they wished. Participants in this group posted an average of 24.42 posts ( $SD = 5.70$ ) and received an average of 18.88 responses ( $SD = 17.37$ ). Participants in the second group were instructed to post messages in their blogs as did participants in the first group, but responses to their posts were disabled. Participants in this group posted an average of 22.22 posts ( $SD = 4.68$ ). Participants in the third group were instructed in a similar way as those in the first group, but they were asked to write about any subject they wished. Participants in this group posted an average of 27.43 posts ( $SD = 5.64$ ) and received an average of 19.71 responses ( $SD = 20.22$ ). Participants in the fourth group were instructed to post messages in their blogs as did participants in the third group, but responses to their posts were disabled. Participants in this group posted an average of 22.56 posts ( $SD = 3.85$ ). All participants in the four blogging groups were instructed to devote at least 20 min for each writing, that each of their posts contain 200 to 800 words, and that they publish new posts at least twice a week. Participants in the fifth group were instructed to maintain personal diaries in their private personal computers. Similar to the blogging groups, they were asked to write and save articles 200 to 800 words long, at least twice a week, through word processing, and devote to writing at least 20 min each time. These participants were asked to write on their thoughts and feelings concerning their social circumstances and interpersonal relationships. Articles remained private and confidential; participants in

this group reported, however, that diaries were kept in full compliance with instructions.

The participants were completely blind to the administration of other experimental conditions than their own, as well as to the existence of other participants in their own condition. Participants fully complied with their respective experimental condition. This was validated by closely monitoring the four blogging conditions and weekly checks (through e-mail) with participants in the private diary writing. Attrition rates from pre- to postintervention measurements were 23% to 33% in the different groups—similar and nonsystematic across the experimental conditions. The three questionnaires were administered through Web-based forms before the intervention began. These were administered again immediately after the 10th week and finally 2 months following the experimental interventions.

## Results

Table 1 presents the means and standard deviations of self-esteem, social-emotional difficulties, and social behaviors according to group and time of measurement. Despite the random assignment of participants to the experimental groups, a multivariate analysis of variance (MANOVA) found that means at pretest pointed to significant group differences: Wilks's  $\Lambda = .64$ , Hotelling's Trace = .52,  $F(15, 455) = 5.29$ ,  $p < .001$ . These initial differences necessitated the use of statistical analyses that accounted for them while examining time differences among the experimental groups. In light of these initial differences, pre-post changes were defined as adjusted gain scores by regressing the change score on the pretest score and saving the standardized residuals (Patton, Kivlighan, & Multon, 1997). That is, change was measured while considering the starting point, and the initial differences were controlled for. Analyses of variance (ANOVAs) were thus not conducted as regular repeated measure analyses, with main effects of time and group and group by time interaction, but rather as ANOVAs of the adjusted gain scores with group as the main effect. Differences in gains among the six groups were examined; yet, because scores were defined as a function of time, the analysis by group represents an interaction analysis of group by time.

Table 1  
Means and Standard Deviations of Self-Esteem, Social–Emotional Difficulties, and Social Behaviors, by Group and Time of Measurement

Group	Self-esteem						Social–emotional difficulties						Social behaviors					
	Pre		Post		Follow-up		Pre		Post		Follow-up		Pre		Post		Follow-up	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
A	23.54	3.63	27.85	4.75	28.23	4.26	67.54	12.53	73.27	14.15	72.91	14.92	64.65	16.23	68.73	14.93	64.32	15.32
B	29.26	3.90	32.30	4.33	32.30	4.16	74.85	9.76	79.78	10.24	79.50	10.48	71.81	19.09	76.41	18.20	78.45	16.74
C	29.64	4.30	32.36	4.28	32.35	4.14	76.36	7.42	80.43	6.89	79.39	8.27	76.46	11.84	78.11	11.17	77.33	12.74
D	27.37	5.32	29.30	4.80	27.05	5.23	78.85	5.53	80.33	5.99	80.26	6.30	70.93	15.27	72.26	13.84	70.68	13.84
E	30.08	3.90	30.77	4.53	31.22	4.18	76.65	8.36	77.96	7.80	75.61	8.06	72.42	12.69	73.54	12.80	77.00	9.79
F	28.89	4.56	28.56	4.53	29.11	5.14	70.48	11.82	70.52	11.78	70.95	9.94	69.00	12.88	68.37	13.19	68.37	12.01

Note. A = writing about social–emotional difficulties, open to responses ( $n = 26$  at pre- and posttest; 22 at follow-up); B = writing about social–emotional difficulties, closed to responses (27; 20); C = writing on general subjects, open to responses (28; 23); D = writing on general subjects, closed to responses (27; 19); E = writing about social–emotional difficulties on a standalone personal computer (26; 18); F = no-writing control group (27; 19).

Table 2

Univariate ANOVAs for Self-Esteem, Social–Emotional Difficulties, and Social Behaviors for Pre–Post Intervention ( $n = 161$ )

Measure	MSE	df	$F(5, 154)$	$\eta^2$
Self-esteem	51.17	5,154	5.78***	.16
Social–emotional difficulties	134.21	5,154	14.50***	.32
Social behaviors	100.33	5,154	10.96***	.26

\*\*\*  $p < .001$ .

### Effect of Blog Content and Interactivity on Self-Reports

A MANOVA was conducted to examine group differences in participants' gains. A significant effect was found: Wilks's  $\Lambda = .59$ , Hotelling's Trace = .64,  $F(15, 452) = 6.46$ ,  $\eta^2 = .18$ ,  $p < .001$ . Univariate analyses revealed group differences in gains for the three measures (self-esteem, social–emotional difficulties, and social behavior), as shown in Table 2.

Post hoc pair-comparison (using the Tukey's test) analyses for SES scores showed that the mean gain for the blogging group that dealt with social–emotional difficulties whose blog was open to responses was significantly higher ( $\Delta M = 1.11$ ) than the mean gain for the no-intervention control group ( $\Delta M = -2.21$ ,  $p < .001$ ). Furthermore, the gain for the blogging group that dealt with social–emotional difficulties whose blog was closed to responses was significantly higher ( $\Delta M = 1.25$ ) than the gain for both the group that wrote diaries on their standalone personal computers ( $\Delta M = -0.89$ ,  $p < .05$ ) and the no-intervention control group ( $\Delta M = -2.21$ ,  $p < .001$ ). Finally, the gain for the blogging group that wrote on general topics whose blog was open to responses was significantly higher ( $\Delta M = 1.02$ ) than the gain for the no-intervention control group ( $\Delta M = -2.21$ ,  $p < .01$ ).

Post hoc paired comparisons for IPR scores showed that the mean gain for the blogging group that focused on social–emotional difficulties that was open to responses was significantly higher ( $\Delta M = 2.57$ ) than the gain for three groups: the blogging group that wrote on general topics whose blog was closed to responses ( $\Delta M = -1.28$ ,  $p < .001$ ), the group that wrote diaries on their personal computers

( $\Delta M = -1.53, p < .001$ ), and the no-writing control group ( $\Delta M = -3.02, p < .001$ ). Similarly, the mean gain for the blogging group that focused on social–emotional difficulties whose blog was closed to responses was significantly higher ( $\Delta M = 2.02$ ) than the gain for three groups: the blogging group that wrote on general topics whose blog was closed to responses ( $\Delta M = -1.28, p < .001$ ), the group that wrote private diaries on their personal computers ( $\Delta M = -1.53, p < .001$ ), and the no-intervention control group ( $\Delta M = -3.02, p < .001$ ). Finally, the mean gain for the blogging group that wrote on general topics whose blog was open to responses was significantly higher ( $\Delta M = 1.22$ ) than the gain for the blogging group that wrote on general topics whose blog was closed to responses ( $\Delta M = -1.28, p < .05$ ), the group that wrote private diaries ( $\Delta M = -1.53, p < .05$ ), and the no-intervention control group ( $\Delta M = -3.02, p < .001$ ).

Post hoc paired comparisons for IAC scores showed that the mean gain for the blogging group that focused on social–emotional difficulties whose blog was open to responses was significantly higher ( $\Delta M = 1.82$ ) than the gain for the blogging group that wrote on general topics whose blog was closed to responses ( $\Delta M = -0.67, p < .05$ ), the group that wrote diaries on their personal computers ( $\Delta M = -0.82, p < .05$ ), and the no-intervention control group ( $\Delta M = -2.71, p < .001$ ). Similarly, the mean gain for the blogging group that focused on social–emotional difficulties whose blog was closed to responses was significantly higher ( $\Delta M = 2.63$ ) than the gain for the blogging group that wrote on general topics whose blog was open to responses ( $\Delta M = -0.21, p < .01$ ), the blogging group that wrote on general topics whose blog was closed to responses ( $\Delta M = -0.67, p < .001$ ), the group that wrote diaries on their personal computers ( $\Delta M = -0.82, p < .001$ ), and the no-intervention control group ( $\Delta M = -2.71, p < .001$ ). Furthermore, the gain for the blogging group that wrote on general topics whose blog was open to responses ( $\Delta M = -0.21, p < .05$ ) was significantly higher than that of the no-intervention control group ( $\Delta M = -2.71$ ).

These findings support the hypothesis regarding the content of writing: Both blogging groups that focused on participants' social–emotional difficulties showed pre- to postinter-

vention improvement in all three self-report measures compared with the four other writing groups. The findings also support the hypothesis regarding the additional effects of blog interactivity, as participants writing in blogs that focused on social–emotional difficulties and that were open to responses showed the greatest self-reported improvement compared with the other groups.

Analyses of the effects of gender were not performed because of the small numbers of male participants. However, the MANOVA performed on girls alone resulted in findings almost identical to the MANOVA performed on the total sample, Wilks's  $\Lambda = .59$ , Hotelling's Trace = .65,  $F(15, 341) = 4.90, \eta^2 = .18, p < .001$ . Thus, it seems that gender played no role in producing the experimental effects on the dependent measures.

### Effects on Follow-Up Measurements

Using adjusted gain scores, we conducted a MANOVA to examine group differences in self-reported change between postintervention and follow-up measurement. No significant differences were found, Wilks's  $\Lambda = .80$ , Hotelling's Trace = .23,  $F(15, 335) = 1.74, \eta^2 = .07, p > .05$ . A MANOVA performed on girls only revealed very similar results, Wilks's  $\Lambda = .74$ , Hotelling's Trace = .33,  $F(15, 245) = 1.73, \eta^2 = .10, p > .05$ . None of the univariate analyses revealed significant differences. It may therefore be concluded that self-reported gains that were achieved between pre- and postintervention remained stable 2 months later.

### Effect of Blog Content and Interactivity on Experts' Ratings of Social–Emotional Difficulties

Table 3 presents the means and standard deviations of the experts' ratings of the participants' level of social–emotional difficulties, by group and time of measurement. As before, despite the random assignment of participants to groups, means at the first point in time (i.e., first week of intervention) pointed to significant group differences.

An ANOVA that was applied revealed significant initial differences among the experimental groups,  $F(3, 104) = 5.07, p < .01, \eta^2 = .13$ . Post hoc analysis showed that the initial

Table 3  
*Means and Standard Deviations of Expert Judges' Ratings of Social-Emotional Difficulties, by Group and Time*

Group	<i>n</i>	Time 1		Time 2		Time 3	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
A	26	3.68	0.87	4.59	1.24	6.88	1.60
B	27	4.01	0.95	4.69	1.37	7.29	1.50
C	28	4.56	1.25	4.95	1.77	6.45	1.73
D	27	4.70	1.24	4.81	1.64	5.76	1.74

*Note.* The higher the score, the more positive (fewer difficulties) participants' social-emotional condition. A = blogging about social-emotional difficulties, open to responses; B = blogging about social-emotional difficulties, closed to responses; C = blogging about general subjects, open to responses; D = blogging about general subjects, closed to responses. Time 1 = first week of blogging; Time 2 = fifth week of blogging; Time 3 = 10th week of blogging.

mean rating for the blogging group that focused on social-emotional difficulties whose blog was open to responses was significantly lower than both the mean rating of the blogging group that wrote on general topics whose blog was open to responses ( $M = 3.68$  vs.  $M = 4.56$ ,  $p < .05$ ) and the mean rating for the blogging group that focused on social-emotional difficulties whose blog was closed to responses ( $M = 4.70$ ,  $p < .05$ ). These initial group differences mirrored the differences found for the self-report measures and, as mentioned above, necessitated analyzing group changes using adjusted gains.

ANOVA of the adjusted gains from the first to the second ratings (first and fifth weeks of intervention) revealed no significant effects,  $F(3, 104) = 0.09$ ,  $p > .05$ ,  $\eta^2 = .001$ . The ANOVA performed on girls only revealed results similar to those of the total sample,  $F(3, 81) = 0.24$ ,  $p > .05$ ,  $\eta^2 = .009$ . However, significant effects were detected between the first and third ratings (from the first to the 10th week of intervention),  $F(3, 104) = 5.19$ ,  $p < .01$ ,  $\eta^2 = .13$ . Similar results were found for girls only,  $F(3, 81) = 3.00$ ,  $p < .05$ ,  $\eta^2 = .10$ . Post hoc comparisons showed that the mean gain for the blogging group that focused on social-emotional difficulties whose blog was open for responses was significantly higher than the change in the blogging group that wrote on general topics whose blog was closed to responses ( $\Delta M = 0.38$  vs.  $\Delta M = -0.90$ ,  $p < .05$ ). The blogging group that focused on social-emotional difficulties whose blog was closed to responses significantly improved in comparison with the blogging group that wrote on general topics whose blog was closed to responses ( $\Delta M = 0.73$  vs.  $\Delta M = -0.90$ ,  $p < .01$ ).

In addition, a significant increase in experts' ratings was found between the second and third points of time,  $F(3, 104) = 4.86$ ,  $p < .01$ ,  $\eta^2 = .12$ . Post hoc comparisons showed that the mean gain of the blogging group that focused on social-emotional difficulties whose blog was open to responses was significantly higher than the gain for the blogging group that wrote on general topics whose blog was closed to responses ( $\Delta M = 0.34$  vs.  $\Delta M = -0.84$ ,  $p < .05$ ). Similarly, the mean gain for the blogging group that focused on social-emotional difficulties whose blog was closed to responses was also significantly higher than the latter ( $\Delta M = 0.71$  vs.  $\Delta M = -0.84$ ,  $p < .01$ ).

These findings support the argument in regard to the writing content: The participants in the two blogging groups who wrote about their social-emotional difficulties improved in both self-report measures and in the judges' ratings in comparison with the participants in the other groups. Furthermore, the findings support the argument regarding the impact of writing interactivity: The participants in groups with blogs about social-emotional difficulties showed greater improvement in the participants' feelings than was achieved in the other groups. The combination of writing a blog about social-emotional difficulties and having the blog open to responses and interacting with readers led to the most gains.

## Discussion

It seems that the characteristics of the Internet and the qualities of expressive writing might be maximized through blogging. A blog can provide the unique combination of a comfortable space for self-expression, one that is both inti-

mate and authentic, with an interactive social environment that is popular among adolescents (Lenhart & Fox, 2006; Mazur, 2005). In the framework of the present study, the therapeutic value of blogging—as hypothesized recently (e.g., Grohol, 2010; Nagel & Anthony, 2009; Tan, 2008)—among adolescents who experience social–emotional difficulties seems very promising. Miura and Yamashita (2004) argued that blogging provides adolescents with a safe area for self-exposure that contributes to well-being, a beneficial environment, and a resource for information-handling skills that can lead to learning and empowerment; it also affords a social sphere that promotes sharing, reciprocal feedback, and the initiation of relationships contributing to gaining interpersonal skills.

In the present study, one can see that the two blogging groups that focused on social–emotional difficulties (either open or closed to readers' responses) consistently showed—through both self-reports and expert-based judgments—a significant positive change in their initial distressful condition. This finding is consistent with the research literature that presents repeated evidence of the positive impact of expressive writing on emotional relief. Moreover, the present findings support previous research that showed the positive effects of writing about personal difficulties rather than on other topics (e.g., Esterling et al., 1999) or no writing (e.g., Pennebaker & Chung, 2007).

Our results showed that the level of distress of the four blogging groups significantly decreased compared with the two other groups (writing diaries on a personal computer or the no-writing control group). This finding apparently reflects the power of expressing oneself in the virtual social environment of the Internet, an environment accepted and commonly inhabited by adolescents (Leung, 2002; Subrahmanyam & Greenfield, 2008; Valkenburg & Peter, 2009), including many who are diagnosed or characterized as suffering from similar social difficulties (Ando & Sakamoto, 2008; Bardi & Brady, 2010; Bonetti, Campbell, & Gilmore, 2010). That is, the spontaneous and anonymous interpersonal interactions available in cyberspace may alleviate users' self-perceptions and negative emotions and, consequently, contribute to their ability to cope with difficulties in their offline environment (Kraut et al., 2002). Furthermore, self-exposure, typical in cyberspace

in general and in blogging in particular, could serve as an important factor in building social relationships and in coping with loneliness, shyness, social anxiety, and other conditions that inhibit healthy, satisfactory social connections. An adolescent who feels socially rejected in his or her physical environment can exploit the virtual space that he or she manages as an equal; doing so, the Internet user can create him/herself anew, improve self-image, increase self-confidence, and gather friends—factors that may then be reflected in his or her physical surroundings (Whitty, 2008a, 2008b).

Given the small numbers of boys in each group ( $n_s = 4-8$ ), gender was not treated in the current study as a statistical moderator. However, the separate analyses performed on female participants support our impression that boys and girls reacted similarly to the interventions and no meaningful gender effect took place. As gender has been found as a factor significantly related to blogging behavior (Bjarnason, Gudmundsson, & Olafsson, 2010; Huffaker & Calvert, 2005; Liu & Chang, 2010), we propose that gender effects in the context of the present findings are controlled and examined in future research.

The blogosphere constitutes an almost natural space for interpersonal interactions, including for those who experience difficulties in this area in the physical world. Baker and Moore (2008b), who tried to clarify what audience is inclined to manage a blog, found that bloggers could be as characterized as being stressed, depressed, and anxious as opposed to other MySpace subscribers who had no interest in blogging. Furthermore, those who were interested in blogging exhibited poorer interpersonal connections and dissatisfaction with both their online and offline social connections. The researchers also found that participants who blogged for over 2 months showed significant improvement in their feelings of well-being and in their social connections compared with participants who did not blog (Baker & Moore, 2008a).

It is important to note that the participants in the blogging groups in our study who posted on social–emotional difficulties (using blogs either open or closed to audience responses) showed a greater change than did the other groups, including the group that wrote a diary on personal computers. This finding seems to challenge previous results that showed the therapeutic impact

of expressive writing in hand-written personal diaries (e.g., Kerner & Fitzpatrick, 2007; Lago, 2004; Lepore & Greenberg, 2002; Pennebaker & Chung, 2007). This result suggests the possible effect of the type of media, which apparently has to do with the form of writing, as well as with social trends related to publicity and sharing. Although diaries were originally a very private matter and expressive writing was essentially expected to be secret and individual, it seems that a growing number of people nowadays tend to share and involve others in their very private thoughts and feelings, protected by unidentifiability and experiencing a subjective sense of privacy. Typical online writers describe their writing process as a dynamic dialogue with significant other persons and as a way of presenting and exposing inner wishes to a large audience (Hoyt & Pasupathi, 2008; Pennebaker & Chung, 2007). It is therefore possible that our findings reflect this social change.

It seems, then, that it is possible to distinguish among three available types of diary writing: ink-based, standalone computer-based, and Internet-based. Today's teenagers are habituated to a variety of cyberspace activities, in which a blog (independent or as part of a social network), in addition to allowing sharing with a large (or at least a limited) audience, contains an important visual component that enables adding photographs, links, and movies; in other words, a blog can expand the traditional word-based, secret diary (Herring, Scheidt, Wright, & Bonus, 2005). Carrington (2009) provided actual examples, based on interviews with bloggers, of how blog design may enrich self-expression through the constructive use of writing, pictures, and hyperlinks. Thus, the blog constitutes a rich multimedia space, allowing a variety of advanced means of self-expression while communicating anonymously (if desired) with others.

Nonblog writing on a standalone personal computer, however, lacks these special elements. It should be noted that the scribbling, doodling, and drawing that characterize hand-written diaries is, of course, absent in computer writing. Brewin and Lennard (1999) found that participants who maintained hand-written diaries tended to expose more difficult emotions than did those who wrote diaries on a computer, perhaps because the former are less personally attached to writing when typing text. This dif-

ference, however, may in fact have been more salient over a decade ago, when typing was less of a normative way of writing. It should also be kept in mind that a personal diary, even if typed on a personal computer, remains in the private realm of the writer, whereas a blog integrates both private and public components. The essence of blogging is sharing; therefore, the social factor is inherently embedded right from the outset (Hsu & Lin, 2008). In expressive writing in general, a writer expresses him/herself; bloggers can "re-create" themselves and construct identities in interacting with an audience and responders (Gurak & Antonijevic, 2008; Scheidt, 2006). It is important to note that even if there are no actual responses from readers, going public in itself differentiates a blog from a traditional diary, as anonymous exposure and possible responses from others affect a blogger's feeling of continuous interpersonal interactivity and social awareness in the context of self-examination and a commitment to managing the blog (Nardi, Schiano, & Gumbrecht, 2004; Sorapure, 2003). These powerful psychological factors do not operate in offline, personal diary writing.

Indeed, our findings showed that open blogging—either about social-emotional difficulties or about general subjects—produced greater changes in all dependent measures than blogging closed to readers' responses. This finding highlights the important roles of social visibility and feedback that characterize blogging, functions that apparently motivate personal writing and the sustainability of the blog, as well as affecting inner experiences (Chen, Liu, Shih, Wu, & Yuan, 2011; Lu, Lin, Hsiao, & Cheng, 2010; Nardi et al., 2004; Papacharissi, 2004). In fact, the combination of an active blogger who presents intimate, authentic content and an active audience that reads and comments on the content increases the likelihood of the blog writer's change processes (Gurak & Antonijevic, 2008; Kawaura, Miura, Yamashita, & Kawakami, 2010). Nonetheless, our findings showed that writing about distress in itself, even without audience interaction, generates desired changes in participants. That is, although social feedback is an important factor in causing change in bloggers, the very writing has its own value, thus supporting the arguments and replicating the findings pertaining to

the therapeutic value of traditional expressive writing.

The current study is among the first attempts at implementing Internet intervention through blogging. Thus, it provides an expansion of current knowledge on blogging-based intervention as an alternative approach to help adolescents in distress. We studied the effects of this intervention on a specific distress area—adolescents' social-emotional difficulties; therefore, generalizations to other problem areas and age groups, as well as possible moderating effects of gender, need still to be examined. Other possible moderators, such as specific personal characteristics (e.g., introversion-extroversion, verbal skills), and the place and the authority directing or initiating blog writing (Nazarian & Smyth, 2010), could be of interest, too, for future research. Also, further examination of the effects of readers' comments on bloggers—including possible deteriorating effects of negative and hostile responses (Valkenburg, Peter, & Schouten, 2006)—should be pursued. Although use of conventional blog is on decline, at least in the United States (Zickuhr, 2010), it seems that blogging activity is still flourishing, lately through social networks (e.g., Facebook) and microblogging (e.g., Twitter). It might be of interest to examine these emerging trends on online expressive writing. Yet another direction for research is an examination of the efficacy of clients' blogging in parallel with therapy sessions (open or closed to others). This may act as a possible means of promoting client change and of identifying and detecting difficulties through their expressive writing carried out separately from traditional therapeutic communication.

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