Clinical Depression and Day-to-Day Social Interaction in a Community Sample

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Adult participants recruited from the community, one half of whom met criteria for clinical depression, described their day-to-day social interactions using a variant of the Rochester Interaction Record. Compared with the nondepressed participants, depressed participants found their interactions to be less enjoyable and less intimate, and they felt less influence over their interactions. Differences between the two groups in intimacy occurred only in interactions with close relations and not in interactions with nonintimates, and differences in influence were more pronounced for those who were cohabiting than for those who were not. There were no differences in how socially active depressed and nondepressed people were or in the amount of contact they had with different relational partners.

Across a variety of theoretical perspectives, there is considerable agreement that poor social relations are associated with depression. The social relationships of depressed people are assumed, and generally have been found to be, more disturbed and less rewarding than the social relationships of nondepressed people. Despite this broad agreement, there are shortcomings in research about this topic, one of which is that few studies have examined the day-to-day social lives of depressed people, and of these few, none has studied people who were known to be clinically depressed.

The present study was intended to remedy these shortcomings by comparing the day-to-day social interactions of a sample of people who met diagnostic criteria for clinical depression with the interactions of an otherwise similar sample of nondepressed people. Participants who met *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed. (*DSM–IV*; American Psychiatric Association [APA], 1994) criteria for clinical depression were recruited from the community as were a control group of nondepressed participants. For 2 weeks, both groups used a variant of the Rochester Interaction Record (RIR; Wheeler & Nezlek, 1977) to describe the social interactions they had.

These descriptions provided a basis for measuring interaction quantity (no. of interactions per day, size of social network, and time spent in interaction) and for measuring how enjoyable and intimate interactions were and how much influence participants

felt they had over interactions. Enjoyment, intimacy, and influence were measured because they represent basic dimensions of interaction (Nezlek & Pilkington, 1994) that previous research has suggested distinguish the interactions of depressed and nondepressed people.

The primary hypothesis of the study was that depressed people, compared with nondepressed people, would find their social interactions to be less enjoyable, they would experience less intimacy in interaction, and they would feel that they had less influence over their interactions. Given the inconsistent results of previous studies concerning depressed–nondepressed differences in social activity, it was difficult to form a strong hypothesis regarding such differences, although such differences were examined.

The hypothesized differences between depressed and nondepressed persons in enjoyment and intimacy were based on the considerable research and theory suggesting that depressed people have more problematic or less rewarding social relationships than do nondepressed people (Barnett & Gotlib, 1988). For example, increased marital conflict has been found to be associated with depression (Paykel & Weissman, 1973) and with the course of depressive symptoms (Weissman & Paykel, 1974). Gotlib (1986) found that depressed patients felt more uncomfortable in interactions and had more arguments with members of their social networks than nondepressed control participants. Poor social integration has been found to predict the onset (Phifer & Murrell, 1986) and course of depressive symptoms (Cutrona, 1984; Lin & Ensel, 1984), and a lack of a confiding, intimate relationship has been found to be associated with an increased risk for experiencing clinical depression (Brown & Harris, 1978; Brown & Prudo, 1981).

The hypothesized differences between depressed and nondepressed persons in influence in interaction was based on a body of theory and research suggesting that depressed people believe they have less control over their lives than do nondepressed people (Abramson, Seligman, & Teasdale, 1978; Abramson, Metalsky, & Alloy, 1989). A similar assumption is also inherent in Beck's (1972) triad theory. According to Beck, depressed people are pessimistic about their futures, a pessimism that may stem from their beliefs that they can not change their lives for the better.

Moreover, there is ample evidence that a perceived lack of control over life events is associated with an increase in depressive symptoms (Weary & Gannon, 1996).

In the past, some have argued that the available research did not adequately describe how depression manifests itself in day-to-day life (Coyne, Kahn, & Gotlib, 1987; Hokanson, Lowenstein, Hedeen, & Howes, 1986) and that diary-style studies of daily life could provide such information (Coyne & DeLongis, 1986; Coyne et al., 1987). See Reis and Wheeler (1991) for a discussion of the advantages of using diary-style methods for studying daily social life.

In keeping with such suggestions, there is a growing body of research on daily life and depression, and the results of the research tend to agree with the results of research using other methods. Depressed (or dysphoric) people (usually students) have been found to have less rewarding social lives than nondysphoric people. For example, Hokanson, Rubert, Welker, Hollander, and Hedeen (1989) found that depressed students reported less contact with their roommates, found these contacts to be less enjoyable, and experienced more stress than did nondepressed students.

In two studies—Nezlek, Imbrie, and Shean (1994), and Zuroff, Stotland, Sweetman, Craig, and Koestner (1995)—college students described their day-to-day social interactions using the RIR. Nezlek et al. (1994) found that the social interactions of those who were at risk for depression (or, alternatively, self-reportedly dysphoric), as measured by the Center for Epidemiological Studies Depression scale (CES–D; Radloff, 1977), were less enjoyable and less intimate than were the interactions of those who were not at risk. In addition, at-risk participants felt less confident and influential in their interactions. It is interesting that Nezlek et al. did not find differences in the amount of social contact between those at risk and those not at risk, despite the fact that their sample provided adequate power (.85) to detect a difference of .5 SD.

Zuroff et al. (1995) operationally defined depression using Blatt's constructs of dependency and self-criticism (Blatt, 1974; Blatt & Zuroff, 1992) and, consistent with the results of Nezlek et al. (1994), found that pleasantness of interaction was negatively correlated with self-criticism. Zuroff et al. found no relationship between pleasantness and dependency. Somewhat inconsistent with the results of Nezlek et al. (1994) were the results of Zuroff et al., who found that number of interactions per day and interaction intimacy were positively correlated with dependency, although they were not related to self-criticism.

Despite the strengths of these studies, the implications of this research for understanding how clinical depression manifests itself in nonstudent populations may be limited. Each studied a collegiate sample and, as noted by Flett, Vredenburg, and Krames (1997), "The interpretation and significance of research with students as an analogue of clinical depression continues to be an extremely contentious issue" (p. 396). Although the depression of collegians is genuine, the experience of depression within a collegiate environment may not be the same as it is in other environments (Coyne & Gotlib, 1983). Also, given the samples, the recruiting techniques involved, and the operational definition of depression, it is likely that many, if not most, participants constituting the depressed subsamples in these studies were dysphoric and not clinically depressed. The procedure used to procure the sample for the present study was explicitly designed to overcome these limitations.

The primary hypotheses of the study concerned broad effects of depression. Nevertheless, previous research has found that reactions to interactions can vary as a function of the relationship shared by those with whom one is interacting (e.g., Leary et al., 1994; Nezlek, 1995). Accordingly, the present study examined the extent to which depression effects varied across interactions with different relational partners. Finally, because a diagnosis of clinical depression cannot be randomly assigned like the different conditions of an experiment, the analyses were designed to control for naturally occurring differences between depressed and nondepressed participants on a variety of potentially confounding characteristics. Accordingly, the study determined if depression effects were confounded with effects due to other individual differences such as sex, cohabitation, education, socioeconomic status, and race.

Method

Participant Recruitment and Selection

Participants were recruited through advertisements placed in a Richmond, VA, newspaper. One advertisement solicited the participation of depressed men and women, ages 25–55, for a 2-week study on depression and social interaction that consisted of several questionnaires and a daily diary. Participants would be paid $40 for completing the study. The advertisement also included an abbreviated version of the Beck Depression Inventory (BDI; Beck, 1972). Nondepressed participants were recruited using a similar advertisement, placed a few weeks later in the same newspaper. The advertisement did not mention depression except for an additional question concerning people's previous depression or psychiatric conditions.

Of the 84 people who responded to the advertisement for depressed participants, 24 were rejected because of low BDI scores. Of the remaining 60, 10 did not answer their phones or return phone calls, and 2 were not interested in the study when contacted. The 48 remaining applicants were screened using a telephone interview. A telephone interview was used because it provided an efficient and valid means to diagnose participants. Research comparing telephone and face-to-face interviews for diagnosing major depressive disorder (Rohde, Lewinsohn, & Seeley, 1997; Wells, Burham, Leake, & Robins, 1988) suggested that the two methods provide similar diagnoses.

The telephone interview used two instruments, the SCID–P and a structured interview based on the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960). The SCID–P (Spitzer, Williams, Gibbon, & First, 1990) is a structured clinical interview for the Diagnostic and Statistical Manual of Mental Disorders, 3rd ed., revised (DSM–III–R; APA, 1987), with psychotic screen, modified for DSM–IV (APA, 1994) dysthymia/major depression field trial. The SCID–P provides a systematic format for diagnosing Axis I psychopathology and has been used frequently in research on depression (e.g., McCullough, McCune, et al., 1994; McCullough, Roberts, et al., 1994). For example, all five sites in the DSM–IV mood disorders field trial (McCullough, McCune, et al., 1994) used the SCID–P to screen participants. The HRSD is a widely used clinical rating scale for evaluating severity of depression; O'Hara and Rehm (1983) demonstrated that raters can make reliable and valid judgments of depression severity using the HRSD. On the basis of previous research with the interview version of the HRSD (McCullough et al., 1988), participants also had to score above 20 on the HRSD to be included in the study.

To be included in the study, participants had to meet criteria for current major depression according to DSM–III–R, and they could not present a current or lifetime history of psychosis, mania, or alcohol or substance

abuse.[1] A total of 15 applicants were rejected because they did not meet these criteria. Of the remaining 33 applicants, 24 attended an introductory meeting and participated in the study. At the meeting, applicants completed a version of the CES-D (Radloff, 1977), and 2 participants who reported symptom levels well below the at-risk cutpoint on the CES-D were excluded from the analyses. Also, 3 participants who had only four symptoms on the SCID-P were excluded.[2] This left 19 participants in the depressed group.

In all, 39 people responded to the advertisement for the control sample, and 10 people applied to participate after hearing about the study from acquaintances. Of these 49, 12 were rejected because they had experienced depression or another psychiatric condition, and another 13 were unable to be contacted, indicated that they were not interested in participating, or did not attend the initial meeting. All of the remaining applicants were interviewed by telephone, and all reported no current depressive symptoms, mania, substance abuse, or psychosis. The final nondepressed sample consisted of 24 participants.

The two samples were similar in age, percentages of men and women, race, and number of children in the home. Except for one person in each group, all were employed. The only demographic characteristic on which the two samples differed significantly was that the nondepressed sample was more likely to be cohabiting than the depressed sample, $\chi^2(1, N = 43) = 8.1, p < .01$. A description of the characteristics of the two samples is presented in Table 1.

Social Interaction Diary

Social interaction was measured using a variant of the RIR (Wheeler & Nezlek, 1977). Similar to the procedure in previous studies using the RIR,

Table 1
Sample Characteristics

Variable	Depressed	Nondepressed	p
No.	19	24	>.50
Men	5	5	
Women	14	19	
Age (years)			
M	42	38	.11
SD	9.5	9.7	
Race			
Caucasian	15	20	>.50
African American	4	4	
Education			
High school only	11	7	.06
More than high school	8	17	
Income			
<$40,000	14	12	.12
$40,000+	5	12	
Married/cohabiting	6	18	.01
Divorced/separated/single	13	6	
Children in home			
M	1.2	1.3	>.50
SD	1.2	1.4	
CES-D			
M	30.1	4.7	.01
SD	10.1	4.7	
HRSD			
M	NA	30.8	
SD		6.3	

Note. Significance levels of tests comparing the two groups are in the column labeled *p*. Means were compared using *t* tests; categorical variables were compared using chi-square tests. CES-D = Center for Epidemiological Studies—Depression scale; HRSD = Hamilton Rating Scale for Depression; NA = not applicable.

participants described the social interactions they had by indicating who their cointeractants were for up to four different cointeractants. They used unique initials for each cointeractant, and they indicated the sex of and the relationship they had with each cointeractant. The relationships were spouse or romantic partner; friend or acquaintance who was not a coworker; coworker who was a friend; and coworker who was not a friend, child, adult relative, or other/stranger.

If more than four others were present, participants described in detail the individuals with whom they had the closest relationships, such as romantic partners and friends, and they indicated how many other men and women were present. The length of each interaction was reported, and participants rated each interaction on three dimensions, enjoyment, intimacy, and influence. These ratings were made using 9-point scales, labeled $1 = not$, $3 = slightly$, $5 = somewhat$, $7 = quite$, and $9 = very$, labels chosen to represent equal intervals (Cliff, 1959).

Instructions to Participants

During an introductory meeting, participants were told that the study concerned people's social interaction and that they would use a form to describe their social interactions. They were told to describe every social interaction they had that lasted 10 min or longer. Interactions were defined as encounters with other people in which people attended to one another and adjusted their behavior in response to one another. Examples were provided to clarify what was an interaction, such as going to dinner, and what was not, such as sitting next to someone while watching a movie and not talking at all.[3] Instructions were similar to those introduced by Wheeler and Nezlek (1977).

The response categories were discussed, and the rating scales were explained. Enjoyment was defined as how pleasurable or satisfying an interaction was. Intimacy was defined as how interpersonally close an individual felt to his or her cointeractants, with specific mention that "intimacy does not have to be sexual, nor does it have to be evident only through conversation." Influence was defined as the extent to which the participant felt that he or she "guided or controlled the interaction," including "deciding what is to be done or talked about, changing the topic of conversation, changing the location, starting or ending the interaction, etc."

Participants were encouraged to complete the records at least once a day at a uniform time, such as before going to sleep. Days that were forgotten or missed were to be skipped. They were given a pad of forms and a booklet containing the instructions. After 3 days, they were contacted to see if they were having any problems maintaining the diary; none was reported.

At the end of the record-keeping period, participants were interviewed individually about the difficulties and potential sources of inaccuracy in their data. They were encouraged to be candid and were told they would be paid regardless of what they said about how they maintained their diaries. Participants maintained their diaries an average of 14.1 days and, on

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[1] Participants would have been classified identically if *DSM-IV* criteria had been used because the *DSM-IV* A-criteria, which are used to diagnosis depression, are the same as the A-criteria in *DSM-III-R*.

[2] The results of analyses that included these participants were similar to the results reported in this article.

[3] Phone calls were considered to be interactions. Across all participants, the average number of calls per day was 0.5, lasting an average of 13 min per day. The results of analyses excluding phone calls were virtually identical to those reported in this article. Also, similar to past research using the RIR, interactions over 300 min (less than 3% of the total) were divided into shorter, sequential interactions. The total time of these interactions equaled the length of the original interaction, and all information from the original interaction was repeated for each shorter interaction.

average, reported updating their diaries 1.5 times per day doing this. Participants' answers to other questions about how they maintained the diary were similar to those given by participants in other studies (cf. Nezlek, Wheeler, & Reis, 1983), and they suggested that participants followed instructions and that their diaries accurately represented their social lives. After the interview, participants were paid and their questions about the study were answered.

Results

In most previous research using diaries, such as the RIR, hypotheses have been tested by analyzing summary measures of interaction quantity and reactions to interaction (usually aggregated means) using ordinary least squares (OLS)-based techniques such as analysis of variance or correlation. For example, group differences in average number of interactions per day and average enjoyment in interaction have been examined, and such averages have been correlated with other individual difference measures. These procedures and a rationale for them were introduced by Wheeler and Nezlek (1977) and are discussed in detail by Nezlek and Wheeler (1984).

Such OLS-based procedures have provided empirical support for a wide variety of hypotheses (Nezlek et al., 1983; Reis & Wheeler, 1991). Nevertheless, random-coefficient modeling procedures are now available that provide important advantages over OLS procedures (Bryk & Raudenbush, 1992; Kreft & deLeeuw, 1998), advantages that are particularly pronounced for data structures in which units of analysis have different numbers of observations, for example, different numbers of interactions for individuals. The present study used hierarchical linear modeling, a random-coefficient modeling technique. These analyses had the same target of inference as the OLS analyses used in previous research, but provided more accurate parameter estimates.

The data in this study were analyzed using the program HLM (Version 4.03; Bryk, Raudenbush, & Congdon, 1998). One set of analyses concerned quantity of interaction, and a second concerned reactions to interactions. Quantity of interaction was conceptualized as a day-level phenomenon, and days were analyzed as nested within participants. Reactions to interactions were conceptualized as interaction-level phenomena, and interactions were analyzed as nested within participants. This analytic strategy is described in detail by Nezlek (1999).

In these analyses, day- and interaction-level phenomena were modeled at what is called Level 1 in HLM terminology, and days and interactions were the units of analysis at Level 1. In turn, individual differences in day- and interaction-level phenomena were analyzed at what is called Level 2 in HLM terminology, and the individual participant was the unit of analysis at Level 2. Coefficients were calculated for each participant that represented means of interaction variables. In HLM terminology, a Level 1 model was estimated for each Level 2 unit. The Level 1 model was

$$y_{ij} = \beta_{oj} + r_{ij}.$$

In these models, β_{oj} was a random coefficient representing the mean of y_{ij} across all observations (days or interactions, subscripted i) for each participant (subscripted j), and r_{ij} represented error. For analyses of quantity of interaction, β_{oj} represented an individual's mean for a measure of interaction quantity such as number of interactions per day; for analyses of reactions to inter-

action, β_{oj} represented an individual's mean enjoyment, intimacy, or influence of interaction.

Participants described up to four different individuals present during an interaction, including the relationship they had with each person. This permitted examination of the moderating effects of the presence of relational partners on depression effects; however, a specific interaction could simultaneously involve different relational partners, such as a friend, and a romantic partner could be present at the same event. The presence of more than one type of relational partner meant that such an interaction could be considered as an interaction with any of the relational partners who was present.

To avoid the confounds created by such simultaneous multiple classification, the data were analyzed so that parameter estimates were based only on interactions in which a single type of relational partner was present. Separate analyses were done for each type of relational partner (NREL: friend, romantic partner, family member, coworker, and stranger). Interactions involving only one type of relational partner were targeted using the following Level 1 model:

$$y_{ij} = \beta_{oj} + \beta_{ij}(\text{NREL}) + r_{ij}.$$

If only one type of relational partner was present, NREL was assigned a value of 0. This meant that the intercept (β_{oj}) was a random coefficient representing each participant's mean reaction to interactions that involved only that type of relational partner, interactions for which NREL was 0. Participants who did not have certain types of interactions (e.g., romantic partners) were excluded from analyses of interactions with such partners.[4] Quantity of interaction with different relational partners was analyzed using sets of measures representing the amount of contact participants had with each partner.

Differences between depressed and nondepressed participants were examined by analyzing the variability of the coefficients from the Level 1 models (β_{oj}s) at Level 2. These Level 2 analyses had the same target of inference as OLS regression analyses using aggregated means as dependent measures, and the logic underlying them was the same as the logic of stepwise regression. Diagnosis, sex, cohabitation, education, socioeconomic status, and race were represented with effect-coded variables, and interactions between characteristics were represented by multiplying these variables. Diagnosis was entered into the model first, and variables representing individual characteristics and their interaction with depression were entered to determine if depression effects were confounded with or moderated by other characteristics.

For example, to determine if depression effects were confounded with or moderated by participant sex, the following Level 2 model was tested:

$$\beta_{oj} = \gamma_{oo} + \gamma_{o1}(\text{DEP}) + \gamma_{o1}(\text{SEX}) + \gamma_{o1}(\text{DEP-SEX}) + \mu_{oj}.$$

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[4] The target of inference of these analyses was interactions with certain relational partners, and other analyses with similar targets of inference could have been chosen. Nonetheless, these other analyses would have produced parameter estimates that were less accurate than those presented in this article. A more detailed rationale for the present analyses is available from the first author.

Table 2
Enjoyment and Intimacy of Interactions

Measure	Sample				Depression			
	n	Events	M	SD	Effect	Variance	t	p
Enjoyment								
Overall	42	2,369	6.16	1.49	1.74	37	4.59	.00
Friend	41	2,383	6.34	1.17	1.28	21	3.93	.00
Family	38	2,299	6.21	2.02	2.08	25	5.59	.00
Romantic	32	1,966	6.30	1.92	2.20	40	5.08	.00
Coworker	35	2,115	4.61	1.33	1.54	15	3.87	.00
Stranger	37	2,179	5.12	1.24	1.46	27	3.70	.00
Intimacy								
Overall	42	2,369	4.82	1.75	0.92	07	1.83	.07
Friend	41	2,383	4.49	1.90	1.04	08	2.09	.04
Family	38	2,299	5.58	1.89	1.68	23	3.32	.00
Romantic	32	1,966	5.54	2.13	1.52	17	2.39	.02
Coworker	35	2,115	2.73	1.51	0.42	00	0.86	ns
Stranger	37	2,179	3.34	1.63	0.39	00	0.39	ns

Note. The number of participants and interactions contributing data to each analysis are listed in the columns labeled n and Events, respectively. Estimates of means and standard deviations were taken from a totally unconditional model. The percentage of the residual variance of the β_{oj} coefficients accounted for by diagnosis is presented in the column labeled Variance. Depression effects were taken from Level 2 models, which included all significant individual difference variables.

The γ_{o1} coefficient (DEP) represented the depression effect, the γ_{o1} coefficient (SEX) represented the sex effect, the γ_{o1} coefficient (DEP-SEX) represented the interaction between depression and sex, and μ_{oj} represented error.[5] The strength of depression effects was determined by comparing residual variances (the variances of the μ_{oj}s) from two analyses, one in which diagnosis was modeled at Level 2 and one in which it was not.

Reactions to Interaction

The results of all of the analyses confirmed the hypothesis that depressed people would find their social interactions to be less enjoyable than would nondepressed people. Across all interactions and in interactions with all relational partners, depressed people found their interactions to be less enjoyable than did nondepressed people. These differences were highly reliable ($ps < .001$) and strong. Main effects for depression were between 1.5 and 2.0 scale points, and diagnosis accounted for between 15% and 40% of the residual variance of enjoyment. Moreover, other individual differences did not moderate these effects. The results of these analyses are summarized in Table 2.

The hypothesis that depressed people would experience less intimacy in their social interactions than nondepressed people was confirmed by the results of the analyses of interactions with the three close relational partners: friends, family members, and romantic partners. In interactions with these partners, depressed people found their interactions to be less intimate than did nondepressed people. These differences were reliable ($ps < .05$) and varied in strength. Main effects for depression were between 1.0 and 1.5 scale points, and diagnosis accounted for between 8% and 23% of the residual variance of intimacy. The depression effect in the analysis of intimacy across all interactions was in the expected direction, but did not reach conventional levels of significance ($p < .10$). There were no depression effects in the analyses of intimacy of interaction with coworkers and strangers. Moreover,

other individual differences did not moderate these effects. The results of these analyses are summarized in Table 2.

The results of all of the analyses confirmed the hypothesis that depressed people would feel that they had less influence over their social interactions than would nondepressed people. Across all interactions and in interactions with all five relational partners, depressed people felt they had less influence over their interactions than did nondepressed people. Nonetheless, follow-up analyses suggested that this main effect was moderated by cohabitation status. There was a significant interaction of cohabitation and diagnosis in all analyses except for interactions with family members, although the interaction term in this analysis approached conventional levels of significance ($p = .06$). In none of these analyses was the main effect for cohabitation status significant. The results of these analyses are summarized in Table 3.

The nature of the interaction between diagnosis and cohabitation is represented by the means presented in Table 4. The pattern of means across the analyses is fairly consistent. Depression effects were greater for those who were cohabiting than for those who were not. The depression effect for cohabiting participants was close to 3.0 scale points in all analyses, whereas it was between 0.3 and 1.1 scale points for participants who were not cohabiting (and was reversed in the analysis of interaction with strangers).

Quantity of Social Contact

For each day that participants were in the study, the number of social interactions, time spent in social contact, and the number of

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Table 3
Influence in Interaction: Interaction of Diagnosis and Cohabitation

Measure	Sample				Main effect for depression		Cohabitation interaction	
	n	Events	M	SD	t	p	t	p
Overall	42	2,369	4.98	1.70	3.32	.00	2.50	.02
Friend	41	2,383	5.06	1.57	3.20	.00	2.68	.01
Family	38	2,299	4.79	1.84	4.44	.00	1.93	.06
Romantic	32	1,966	4.74	1.93	3.73	.00	2.10	.05
Coworker	35	2,115	4.80	2.02	2.83	.00	2.63	.01
Stranger	37	2,179	4.70	1.76	2.12	.04	2.41	.02

different people contacted during the day were calculated.[6] Across all 43 participants, data were collected for 574 days. Analyses of these data did not find any significant differences between depressed and nondepressed participants in their social activity. Depressed participants had an average of 3.6 interactions per day and nondepressed participants had an average of 4.6 interactions per day, a difference that approached but did not reach conventional levels of significance, $t = 1.7$, $p < .10$. Depressed participants spent an average of 221 min per day with others, and nondepressed participants spent an average of 263 min with others, a difference that was not statistically significant, $t = 1.1$, $p = .26$. Depressed participants saw 3.3 different people each day and nondepressed participants saw 3.9 different people each day, a difference that approached but did not reach conventional levels of significance, $t = 1.6$, $p = .11$. Moreover, analyses that took into account relational status of cointeractants and individual differences other than diagnosis did not find any depression effects or interactions of depression and other individual differences.

Discussion

As hypothesized, depressed people, compared with nondepressed people, had less enjoyable and less intimate interactions, and they felt that they had less influence over their social interactions. It should be noted, however, that these differences varied as a function of the specific characteristic of interaction being considered and the relational partner with whom people were interacting.

Depression effects were the strongest and most consistent in the analyses of enjoyment of interaction. Depressed people found

Table 4
Influence in Interaction: Means for Interaction of
Diagnosis and Cohabitation

Measure	Not cohabiting		Cohabiting	
	Not depressed	Depressed	Not depressed	Depressed
Overall	5.50	5.09	6.14	3.20
Friend	5.66	5.39	6.04	3.18
Family	5.47	4.33	6.15	3.21
Romantic	5.43	4.57	5.97	2.97
Coworker	5.28	4.44	5.82	2.94
Stranger	4.81	4.97	5.85	3.17

interactions with all types of relational partners to be less enjoyable than did nondepressed people. Such a difference is consistent with how depression is conceptualized in the *DSM–IV* (APA, 1994) and with the results of studies using methods other than social interaction diaries (Segrin & Dillard, 1992).

Clinicians have long noted that depressed people tend to view themselves and others in a negative light (Beck, 1972). Moreover, depressed people's relationships may be more conflictual, and others may respond to depressed individuals in a negative manner (Gotlib, 1986; Hokanson et al., 1986). Depressed participants' lower ratings of enjoyment in their interactions may reflect both their tendency to view their experiences in a negative light and an awareness of the irritation and frustration they engender in their partners (Coyne et al., 1987).

Compared with the nondepressed participants, depressed participants also found their interactions to be less intimate. Of particular importance is the fact that these differences characterized interactions occurring with close relationships (romantic partners and spouses, friend, and family members), but not interactions with nonintimates (coworkers and strangers). A lack of intimacy within close relationships may contribute to a sense of isolation that exacerbates or maintains depressive symptomatology (Brown & Harris, 1978). This lack of intimacy is also consistent with the work of Coyne and other theorists who emphasize the poor quality of close relationships that accompanies depression.

Compared with the nondepressed participants, depressed participants felt that they had less influence in their interactions, a finding similar to the results of Hirschfeld, Klerman, Clayton, and Keller (1983), who found that depressed patients tended to be less assertive in their interactions. Unexpectedly, depression effects in influence were moderated by cohabiting status. The effect was more pronounced for cohabiting participants than for those who were not cohabiting. Moreover, this moderation occurred in the analyses of interactions with each relational partner. This breadth indicates that the effect was not due to interactions with cohabiting partners (usually spouses), but may have been due to some dispositional characteristic of depressives who cohabit.

Speculatively speaking, depressed people who are cohabiting may be in relationships in which their partners take responsibility

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for managing the relationship and, by extension, the life affairs of the depressive partner. The needs of a depressed person may serve as an organizing theme for the relationship. Family members may adjust their patterns of interaction to accommodate the needs of the depressed person (i.e., a need for others to take initiative, structure interactions, etc.), an accommodation that leads to increased dependency and a lessened sense of agency in the depressed person. Depressed people who are not cohabiting may not be as likely to have the types of relationships that lead to such states, and consequently, they may retain a more normal sense of agency. Clearly, understanding this phenomenon requires further study, including replication of the present results and the inclusion of more relationship-level measures.

Depressed participants were not less socially active than the nondepressed participants in terms of number of social interactions, time spent in social contact, and number of different people with whom they interacted each day. Moreover, additional analyses (that were not presented) suggested that the lack of differences between the two groups in social activity was not due to differences in how depressed and nondepressed people distributed their interactions. Although these null results are consistent with the results of previous research (Nezlek et al., 1994), the fact that depressed people were not less socially active may be somewhat counter-intuitive.

Implicit in considerable research and theorizing about depression is the assumption that depressed people are socially isolated. Nonetheless, although many psychologists may assume that depressed people suffer from a lack of social contact, low level of social activity per se is not a *DSM-IV* criterion for clinical depression. *None* of the nine *DSM-IV* A-criteria used to diagnose a major depressive episode concerns social isolation or withdrawal per se.

The lack of differences between depressed and nondepressed people in social activity can be understood from a variety of perspectives. People may initiate more interactions with depressed people than with nondepressed people because they believe that depressed people need support, and if so, depressed people would not have fewer interactions. This possibility is consistent with the fact that depressed participants perceived less influence over their interactions (which included initiation of interactions) than did the nondepressed participants.

Depressed participants may have maintained a level of social activity similar to nondepressed participants because they felt obliged to do so. The greater level of dependency that some believe accompanies depression may have motivated them to be socially active, despite the relative lack of rewards they derived from social contact. Finally, depressed people may be more socially active than one might presume because social interaction is more pleasurable for them than being alone. Although depressed participants found social interaction less enjoyable than did nondepressed participants, differences in how enjoyable the two groups found time alone may have been even greater.

The failure to find depressed–nondepressed differences in social activity may have been due to the nature of the depressed sample. Although depressed participants met *DSM-IV* criteria for major depressive disorder, they may not have been sufficiently depressed for such differences to occur. Alternatively, if the socially withdrawn constitute a distinguishable subpopulation of depressives, they may have been underrepresented in the present sample. Although Flett et al. (1997) concluded that "the extant literature

provides little evidence for the existence of meaningful subtypes" (p. 401), more research is needed to address this issue fully.

Nevertheless, the lack of a relationship between depression and social activity is consistent with research on loneliness. In their review, Marangoni and Ickes (1989) suggested that "*qualitative* considerations are more important than *quantitative* considerations in mediating the relationship between social network variables and the experience of loneliness" (p. 97). The present results suggest that, like lonely people, depressed people suffer more from a lack of rewarding social contact than from a lack of social contact per se.

The present null results are also consistent with research on the buffering effects of social support on depression. Some research has suggested that the availability of a single, close, confiding relationship can provide a buffering effect against depression, whereas a large number of social contacts per se does not (Brown & Harris, 1978; Cohen & Wills, 1985). Similarly, other research suggests that quality of support, not quantity, provides a buffer (e.g., Sheldon & West, 1989).

Another perspective is provided by Nezlek (in press), who noted that many studies of social interaction have found no relationship between psychological well-being and quantity, whereas they have consistently found negative relationships between well-being and quality of interaction. This combination suggests that quantity and quality of interaction reflect different processes. The model he presented assumes that quantitative aspects of social life are governed by more cognitively focused processes (such as roles and plans) centering on needs for prediction and control, whereas qualitative aspects reflect processes centering on more affectively focused needs for belongingness. If quantity of interaction is determined by more cognitively based phenomena, relationships between quantity and a mood disorder such as depression may be less pronounced than if quantity reflects the operation of more affectively based processes.

Finally, null results raise questions about statistical power. Determining the power of hierarchical linear models is not fully understood at present (Kreft & deLeeuw, 1998), so it is difficult to determine precisely the power of the present design to detect depressed–nondepressed differences in social activity. Nonetheless, for traditional OLS analyses, the 43 participants in the study would provide a power of approximately .40 to detect a .5 *SD* difference between two groups. Given that HLM provides more accurate parameter estimates than OLS, the power of the present design to detect differences was probably greater than .40, but at this time it is difficult to know how much greater.

The present results replicate closely the results of Nezlek et al. (1994), a study of social interaction and self-reports of depressive symptoms in a collegiate sample. This convergence suggests that studies of collegiate samples who may be subclinically depressed may have value in understanding clinical depression in the general population. Regardless, these two studies provide the type of research on students as analogues for clinical populations suggested by Vredenburg, Flett, and Krames (1993).

Unfortunately, the available data cannot answer questions of causality. Is depression a reaction to a social life that is less enjoyable and intimate and one over which people feel they have no control, or does depression lead to a deterioration of one's social life, or both? Decreases in rewarding activities have been found to precede depression (Lewinsohn, Gotlib, & Seeley, 1997),

and psychosocial variables have been found to be both antecedents and consequences of depression (Stader & Hokanson, 1998). Such questions can be answered only through studies examining changes in depressive status and social interaction over time.

The daily lives of depressed people seem to be meaningfully different than the daily lives of nondepressed people. Although future research may need to study a more diverse sample of depressed persons (such as people who are both depressed and substance abusers) to improve the generalizability of results, the present study provides a framework for such research.

References

American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed., rev.). Washington, DC: Author.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Abramson, L. Y., Metalsky, G. I., & Alloy, L. B. (1989). Hopelessness and depression: A theory-based subtype of depression. *Psychological Review, 96,* 358–372.

Abramson, L. Y., Seligman, M. E. P., & Teasdale, J. D. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology, 87,* 49–74.

Barnett, P. A., & Gotlib, I. H. (1988). Psychosocial functioning and depression: Distinguishing among antecedents, concomitants, and consequences. *Psychological Bulletin, 104,* 97–126.

Beck, A. T. (1972). *Depression: Causes and treatments.* Philadelphia: University of Pennsylvania Press.

Blatt, S. J. (1974). Levels of object representation in anaclitic and introjective depression. *Psychoanalytic Study of the Child, 29,* 107–157.

Blatt, S. J., & Zuroff, D. C. (1992). Interpersonal relatedness and self-definition: Two prototypes for depression. *Clinical Psychology Review, 12,* 527–562.

Brown, G. W., & Harris, T. (1978). *Social origins of depression.* London: Free Press.

Brown, G. W., & Prudo, R. (1981). Psychiatric disorder in a rural and urban population: 1. Etiology of depression. *Psychological Medicine, 11,* 581–599.

Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models.* Newbury Park, CA: Sage.

Bryk, A. S., Raudenbush, S. W., & Congdon, R. (1998). *HLM.* Chicago: Scientific Software.

Cliff, N. (1959). Adverbs as multipliers. *Psychological Review, 66,* 27–44.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98,* 310–357.

Coyne, J. C., & DeLongis, A. (1986). Going beyond social support. The role of social relationships in adaptation. *Journal of Consulting and Clinical Psychology, 54,* 454–460.

Coyne, J. C., & Gotlib, I. H. (1983). The role of cognitions in depression: A critical appraisal. *Psychological Bulletin, 94,* 472–505.

Coyne, J. C., Kahn, J., & Gotlib, I. H. (1987). Depression. In T. Jacob (Ed.), *Family interaction and psychotherapy* (pp. 509–533). New York: Plenum.

Cutrona, C. E. (1984). Social support and stress in the transition to parenthood. *Journal of Abnormal Psychology, 93,* 378–390.

Flett, G. L., Vredenburg, V., & Krames, L. (1997). The continuity of depression in clinical and nonclinical samples. *Psychological Bulletin, 121,* 395–416.

Gotlib, I. H. (1986, August). *Depression and marital interaction: A longitudinal perspective.* Paper presented at the 94th Annual Convention of the American Psychological Association, Washington, DC.

Hamilton, M. (1960). A rating scale for depression. *Journal of Neurology, Neurosurgery, & Psychiatry, 23,* 56–61.

Hirschfeld, R. M. A., Klerman, G. L., Clayton, P. J., & Keller, M. B. (1983). Personality and depression: Empirical findings. *Archives of General Psychiatry, 40,* 993–998.

Hokanson, J. E., Lowenstein, D. A., Hedeen, C., & Howes, M. (1986). Dysphoric college students and roommates: A study of social behaviors over a three-month period. *Personality and Social Psychology Bulletin, 12,* 311–324.

Hokanson, J. E., Rubert, M. P., Welker, R. A., Hollander, G. R., & Hedeen, C. (1989). Interpersonal concomitants and antecedents of depression among college students. *Journal of Abnormal Psychology, 98,* 209–217.

Kreft, I., & deLeeuw, J. (1998). *Introducing multilevel modeling.* Thousand Oaks, CA: Sage.

Leary, M. R., Nezlek, J. B., Downs, D., Radford-Davenport, J., Martin, J., & McMullen, A. (1994). Self-presentation in everyday interactions: Effects of target familiarity and gender composition. *Journal of Personality and Social Psychology, 67,* 664–673.

Lewinsohn, P. M., Gotlib, I. H., & Seeley, J. R. (1997). Depression-related psychosocial variables: Are they specific to depression in adolescents? *Journal of Abnormal Psychology, 106,* 365–375.

Lin, N., & Ensel, W. M. (1984). Depression mobility and its social etiology: The role of life events and social support. *Journal of Health and Social Behaviour, 25,* 176–188.

Marangoni, C., & Ickes, W. (1989). Loneliness: A theoretical review with implications for measurement. *Journal of Social and Person Relationships, 6,* 93–128.

McCullough, J. P., Kasnetz, M. D., Braith, J. A., Carr, K. F., Cones, J. H., Fielo, J., & Martelli, M. F. (1988). A longitudinal study of an untreated sample of predominantly late onset characterological dysthymia. *The Journal of Nervous and Mental Disease, 176,* 658–667.

McCullough, J. P., McCune, K. J., Kaye, A. L., Braith, J. A., Friend, R., Roberts, W. C., Belyea-Caldwell, S., Norries, S., & Hampton, C. (1994). One-year prospective replication study of an untreated sample of community dysthymia subjects. *The Journal of Nervous and Mental Disease, 182,* 396–401.

McCullough, J. P., Roberts, C. W., McCune, K. J., Kaye, A. L., Hampton, C., Caldwell, S. B., Norris, S. L., & Kornstein, S. G. (1994). Social adjustment, coping style and clinical course among *DSM–III–R* community unipolar depressives. *Depression, 6,* 36–42.

Nezlek, J. B. (1995). Social construction, gender/sex similarity, and social interaction in close personal relationships. *Journal of Social and Personal Relationships, 12,* 503–520.

Nezlek, J. B. (1999). *Multilevel random coefficient analyses of event and interval contingent data in social and personality psychology research.* Unpublished manuscript, College of William & Mary, Williamsburg, VA.

Nezlek, J. B. (in press). The motivational and cognitive dynamics of day-to-day social life. In J. P. Forgas, K. Williams, & L. Wheeler (Eds.), *The social mind: Cognitive and motivational aspects of interpersonal behaviour.* New York: Cambridge University Press.

Nezlek, J. B., Imbrie, M., & Shean, G. D. (1994). Depression and everyday social interaction. *Journal of Personality and Social Psychology, 67,* 1101–1111.

Nezlek, J. B., & Pilkington, C. J. (1994). Perceptions of risk in intimacy and everyday social interaction. *Personal Relationships, 1,* 45–62.

Nezlek, J. B., & Wheeler, L. (1984). RIRAP: Rochester interaction record analysis package (Ms. No. 2610). *Psychological Documents, 14,* 6.

Nezlek, J. B., Wheeler, L., & Reis, H. T. (1983). Studies of social participation. In H. T. Reis (Ed.), *Naturalistic approaches to studying social interaction: New directions for methodology of social and behavioral science* (No. 15, pp. 57–75). San Francisco: Jossey-Bass.

O'Hara, M. W., & Rehm, L. P. (1983). Hamilton Rating Scale for Depression: Reliability and validity of judgments of novice raters. *Journal of Consulting and Clinical Psychology, 51,* 318–319.

Paykel, E. S., & Weissman, M. M. (1973). Social adjustment and depres-

sion: A longitudinal study. *Archives of General Psychiatry, 28,* 659–663.

Phifer, J. F., & Murrell, S. A. (1986). Etiologic factors in the onset of depressive symptoms in older adults. *Journal of Consulting and Clinical Psychology, 95,* 282–291.

Radloff, L. S. (1977). The CES–D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1,* 385–401.

Reis, H. T., & Wheeler, L. (1991). Studying social interaction using the Rochester Interaction Record. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 24, pp. 270–318). Orlando, FL: Academic Press.

Rohde, P., Lewinsohn, P. M., & Seeley, J. R. (1997). Comparability of telephone and face-to-face interviews in assessing Axis I and II disorders. *American Journal of Psychiatry, 54,* 1593–1598.

Segrin, C., & Dillard, J. P. (1992). The interactional theory of depression: A meta-analysis of the research literature. *Journal of Social and Clinical Psychology, 11,* 43–70.

Sheldon, A. E. R., & West, M. (1989). The functional discrimination of attachment and affiliation: Theory and empirical demonstration. *British Journal of Psychiatry, 155,* 18–23.

Spitzer, R. L., Williams, J. R., Gibbon, M., & First, M. B. (1990). *User's Guide for the Structured Clinical Interview for the DSM–III–R.* Washington, DC: American Psychiatric Association.

Stader, S. R., & Hokanson, J. E. (1998). Psychosocial antecedents of depressive symptoms: An evaluation using daily experiences methodology. *Journal of Abnormal Psychology, 107,* 17–26.

Vredenburg, V., Flett, G. L., & Krames, L. (1993). Analogue versus clinical depression: A critical reappraisal. *Psychological Bulletin, 113,* 327–344.

Weary, G., & Gannon, K. (1996). Depression, control motivation, and person perception. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action* (pp. 146–167). New York: Guilford Press.

Weissman, M., & Paykel, E. S. (1974). Treatment effects on the social adjustment of depressed patients. *Archives of General Psychiatry, 30,* 771–778.

Wells, K. B., Burham, M. A., Leake, B., & Robins, L. (1988). Agreement between face-to-face and telephone-administered versions of the depression section of the NIMH Diagnostic Interview Schedule. *Journal of Psychiatric Research, 22,* 207–220.

Wheeler, L., & Nezlek, J. (1977). Sex differences in social participation. *Journal of Personality and Social Psychology, 35,* 742–754.

Zuroff, D. C., Stotland, S., Sweetman, E., Craig, J. A., & Koestner, R. (1995). Dependency, self-criticism and social interactions. *British Journal of Clinical Psychology, 34,* 543–553.