EMOTIONAL INVOLVEMENT/OVERINVOLVEMENT IN THE
RELATIVES OF PATIENTS WITH BIPOLAR DISORDER

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ABSTRACT

STEFFANY JANE FREDMAN: Emotional Involvement/Overinvolvement in the
Relatives of Patients with Bipolar Disorder
(Under the direction of Donald H. Baucom, Ph.D.)

Emotional overinvolvement (EOI), the tendency of a psychiatric patient's relative to

display intrusiveness, excessive self-sacrifice, or an exaggerated emotional response to the

patient, has typically been assessed using the Camberwell Family Interview (CFI). The CFI

is conducted in the patient's absence and combines all three elements into a single, global

score. Fredman, Chambless, and Steketee (2004) addressed this limitation by creating an

observational coding system that provides separate ratings for each of these behaviors, as

observed from direct patient-relative interactions. The current study further refines Fredman

et al.'s coding system by differentiating between appropriate and inappropriate displays of

emotional involvement. The adapted coding system was applied to a sample of 115 patients

with bipolar disorder who had completed pretreatment patient-relative problem-solving

interactions prior to entering a family-based psychosocial intervention program for bipolar

disorder. Results supported the new measure's reliability and construct validity and

demonstrated the predictive validity of the interactional ratings but not the CFI EOI score.

Specifically, in the absence of treatment, low levels of observed inappropriate self-sacrifice

and inappropriate emotional response predicted improved outcome for manic symptoms,

whereas moderate and high levels of observed inappropriate self-sacrifice and emotional

response predicted poor outcomes for manic symptoms. In addition, low and moderate levels

of observed appropriate self-sacrifice predicted poor outcome for depressive symptoms, whereas high levels of appropriate self-sacrifice predicted improved outcome for depressive symptoms. Patients receiving family-based treatment demonstrated improvements in mania and depression regardless of relatives' levels of emotional involvement. Findings are discussed in light of the family environment of bipolar disorder and the potential utility of this methodology to investigate the family environment of other forms of psychopathology.

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TABLE OF CONTENTS

LIST OF TABLES

Table

LIST OF FIGURES

Figure

CHAPTER I: INTRODUCTION

Expressed Emotion as a Framework for Investigating the Family Environment of

Psychopathology

In recent decades, considerable attention has been devoted to the family environments

of individuals with psychopathology in an attempt to generate basic research into the

psychopathology of various illnesses, as well as to develop interventions that might arise

from this knowledge. For both of these purposes, the construct of expressed emotion (EE)

has been a useful means of characterizing the emotional climates of individuals who suffer

from psychiatric disorders. Operationally, EE refers to the number of critical comments the

relative makes, how much hostility the relative expresses about the patient, or how

emotionally overinvolved the relative appears while talking about the patient during the

Camberwell Family Interview (CFI; Vaughn & Leff, 1976a), a semi-structured clinical

interview conducted in the patient's absence. Emotional overinvolvement (EOI) refers to the

relative's intrusiveness or overprotective behavior, excessively self-sacrificing or overly

devoted behavior, or an exaggerated emotional response to the patient's illness or well-being

(Leff & Vaughn, 1985).

A family is classified as "High EE" if any of the patient's relatives makes a high

number of critical comments, shows hostility, or displays marked or extreme EOI. This

practice of categorizing families according to EE level began, and has continued into the

present, as a result of earlier studies in which researchers observed that a high number of

critical comments, the presence of hostility, and marked EOI by relatives were each associated with relapse among patients with schizophrenia in the nine months following discharge from the hospital (Brown, Birley & Wing, 1972; Vaughn & Leff, 1976b; Vaughn, Snyder, Jones, Freeman, & Falloon, 1984).

In general, interest has focused on the predictive utility of EE, and research has demonstrated that high levels of EE reliably predict relapse among individuals with schizophrenia and mood disorders (Butzlaff & Hooley, 1998). Because hostility rarely occurs in the absence of criticism (Vaughn & Leff, 1976b), criticism and EOI have tended to be the main criteria for defining a family as high in EE. With respect to treatment outcome, criticism has tended to be a more robust and reliable predictor of relapse than EOI has, particularly in the areas of schizophrenia and depression (cf., Bentsen et al., 1996; Hooley, Orley, & Teasdale, 1986; King & Dixon, 1999; Vaughn & Leff, 1976b but also see Vaughn et al. (1984) with respect to schizophrenia; also see review by Wearden, Tarrier, Barrowclough, Zastony, & Rahill, 2000). Consequently, it is not surprising that criticism has historically been considered the most important element of the EE construct (cf., Hooley, Rosen, & Richters, 1995).

Emotional Overinvolvement: Understanding its Clinical Significance

In general, the construct of EOI has been less well understood, although some attempts have been made to understand its clinical significance. For instance, among the families of individuals with schizophrenia, it has been shown that EOI in relatives is related to depressed and anxious symptoms (Bentsen et al., 1996) and poor premorbid functioning (Miklowitz, Goldstein, & Falloon, 1983) in patients. Patients with schizophrenia from high-EOI families also displayed higher levels of residual symptoms following treatment than did

patients from low-EOI families or families rated high in expressed emotion because of criticism (Miklowitz et al.).

With respect to other psychiatric conditions, findings regarding EOI have been less consistent. For instance, EOI in parents is associated with anxiety in children (Hirshfeld, Biederman, Brody, Faraone, & Rosenbaum, 1997; Stubbe, Zahner, Goldstein, & Leckman, 1993), and in a sample of adult outpatients treated with behavior therapy for anxiety disorders, relatives' EOI predicted premature treatment dropout (Chambless & Steketee, 1999). Similar findings were observed in a sample of patients hospitalized for eating disorders (Szmukler, Eisler, Russell, & Dare, 1985). Interestingly, however, the presence of EOI in relatives is sometimes related to improved functioning following treatment. For example, Hooley and Hoffman (1999) reported that high levels of EOI were linked to better outcomes for individuals with borderline personality disorder. Specifically, and contrary to prediction, they observed that the presence of EOI in relatives was related to lower rates of rehospitalization and more global improvement one year after the patient was discharged from the hospital (and was not associated with poor outcome in any of the domains they evaluated).

How might one explain the observation that EOI is sometimes associated with poor response to treatment and, at other times, with improved treatment outcome? It is possible that for a given psychiatric disorder, EOI's relation to treatment outcome might depend on the specific EOI behavior(s) demonstrated by the relative. For example, an anxious patient undergoing a challenging treatment like exposure might well experience relatives' intrusive and melodramatic behaviors as stressful and, thus, adding to the anxiety already caused by treatment and the disorder (Chambless & Steketee, 1999). In contrast, a patient with

borderline personality disorder might perceive the same behaviors plus excessive self-sacrifice as indicative of the relative's care and concern, thus leading to feelings of validation and a diminished desire to engage in self-injurious behaviors (Hooley & Hoffman, 1999). However, because ratings of EOI are typically assigned as a single, global score (e.g., on the CFI), the salience of a specific aspect of EOI—that is, intrusiveness, excessive self-sacrifice, or exaggerated emotional response—for a relative rated high in EOI is obscured. Not surprisingly, several investigators have suggested that breaking EOI down into its specific component behaviors would help shed light on its roles with different psychiatric disorders (e.g., Fredman, Chambless, & Steketee, 2004; King, 2000; Wearden et al., 2000; Wiedemann, Rayki, Feinstein, & Hahlweg, 2002).

Understanding the role of EOI also has been impeded by the nearly exclusive focus on the family's comments about the patient in the patient's absence. Traditionally, it has been assumed that the attitudes expressed by the relative about the patient during an interview or on a self-report questionnaire are also evident during patient-relative interactions. Indeed, research has shown that relatives who are classified as High EE on the basis of CFI criticism also tend to be critical during face-to-face interactions with patients (Chambless, Bryan, Aiken, Steketee, & Hooley, 1999; Hooley, 1986; Miklowitz, Goldstein, Falloon, & Doane, 1984; Simoneau, Miklowitz, & Saleem, 1998). Historically, less has been known, however, about whether this is so with CFI-assessed EOI due to the longstanding absence of a behavioral observations measure that assesses all three aspects of the EOI construct.

Fredman et al. (2004) demonstrated preliminary evidence for the reliability and construct validity of an observational coding system of EOI that permits individual ratings for relatives' intrusiveness, excessive self-sacrifice, and exaggerated emotional response

while relatives are engaged in face-to-face discussions with patients. In that sample of relatives of adult outpatients with agoraphobia or obsessive-compulsive disorder, findings suggested that the three behavioral dimensions appear to be related, but distinguishable, aspects of the EOI construct, and support was found for the measure's convergent and discriminant validity. Regarding treatment outcome, patients were less likely to drop out of treatment prematurely if relatives were observed to be excessively self-sacrificing but that the more self-sacrificing relatives were observed to be at baseline, the worse patients' social functioning was at the end of treatment. Interestingly, in this sample, relatives' CFI EOI scores did not predict treatment outcome (Fredman et al., 2001). This observation, taken with the findings regarding excessive self-sacrifice, suggests that (a) it is clinically useful to examine the constituent aspects of the EOI construct during face-to-face interactions between patients and relatives; and (b) it is useful to consider the contribution of the EOI dimensions to the prediction of clinical course in different domains.

The extent to which these findings generalize to other psychiatric populations is not yet known, but Fredman et al. (2004) had hypothesized that individuals who suffer from chronic and severe mental illness would be particularly likely to have relatives who demonstrate emotionally overinvolved behaviors. This seems likely because EOI behaviors appear to be a reaction to the presence of psychopathology in a family member (e.g., Schreiber, Breier, & Pickar, 1995) or to the severity of a psychiatric illness (King, 2000; Miklowitz et al., 1983).

Application of the Emotional Overinvolvement Construct to the Family Environment of

Bipolar Disorder

Bipolar disorder is a recurrent and severe psychiatric disorder associated with significant psychiatric comorbidity, role impairment, and risk of suicide (Coryell et al., 1993; Dion, Tohen, Anthony, & Waternaux, 1988; Harrow, Goldberg, Grossman, & Meltzer, 1990; Miklowitz & Goldstein, 1997). The relatives of individuals with bipolar disorder are also highly distressed by the illness due to substantial instrumental and emotional demands (Dore & Romans, 2001; Perlick, Hohenstein, Clarkin, Kaczynski, & Rosenheck, 2005), which may include shifting roles and responsibilities when the patient is sick versus well, living with the consequences of patients' behaviors while manic (e.g., spending sprees) or depressed (e.g., inability to work or meet household responsibilities), and anxiety or hypervigilance with respect to shifts in the patient's moods and behaviors (Miklowitz & Goldstein; Moltz, 1993).

Given the potentially negative consequences to both patients and their relatives of disturbances in the patients' moods, relatives might develop a strong investment in patients' remaining well and go to great lengths to prevent a manic or depressive recurrence. For instance, they might engage in solicitous or protective behaviors towards patients, such as reminding them to take their medications, consulting with patients' mental health professionals, and offering to take over some of their responsibilities in an effort to reduce stress (Miklowitz & Goldstein, 1997). Because relatives have intimate knowledge of the patients and the course of their illnesses, their monitoring patients' moods and being actively involved in treatment can positively affect the long-term course of bipolar disorder. In fact, as Miklowitz, George, Richards, Simoneau, and Suddath (2003) demonstrated, patients whose families participated in a family-based psychosocial intervention for bipolar disorder

that consisted of (a) psychoeducation about the illness and (b) communication skills training, experienced more positive outcomes during a two-year period (fewer manic and depressive symptoms, more compliance with medication, lower rates of relapse) compared to patients who received only medication plus crisis management.

However, under certain circumstances and in certain contexts, a strong emotional investment in the patient's well-being and solicitous or devoted behaviors by relatives might be unhelpful to a patient with bipolar disorder, particularly if these behaviors are performed excessively and/or inappropriately. For instance, a patient whose relative repeatedly offers unsolicited advice about medication and symptom management (EOI intrusiveness) might rebel against the relative by not taking medication, thereby increasing the risk of manic symptoms and relapse. Alternatively, a patient whose relative demonstrates behaviors that communicate that the relative does not trust the patient to make decisions for himself or herself (intrusiveness) or that the relative is extremely distressed about the patient's well-being (exaggerated emotional response) might experience an increase in depressive symptoms due to feelings of shame and guilt. A similar outcome might obtain for a patient whose relative takes over so many responsibilities (excessive self-sacrifice) that the patient is left feeling ineffective and helpless.

Consequently, it appears that the helpfulness or unhelpfulness of a relative's behavior likely depends on the amount of the behavior displayed, the context (i.e., appropriateness) of the behavior, and the outcome one is assessing (manic versus depressive symptoms). As of yet, though, there is no existing measure that permits one to assess both appropriate *and* inappropriate levels of emotional involvement by relatives of patients with bipolar disorder during face-to-face interactions. Such a measure would be useful because a clearer

understanding of the ways in which relatives' behaviors towards patients with bipolar disorder are helpful or unhelpful offers not only important insights about the psychopathology of bipolar disorder and its family environment but also the ability to predict and optimize long-term outcome for this pernicious illness. Gaining a clearer understanding of the psychopathology of bipolar disorder and its family environment ultimately might also help to shed light on the ways in which relatives' behaviors towards patients with other forms of psychopathology and major medical illnesses might be helpful or, alternatively, unhelpful over time. Therefore, developing, evaluating, and applying a valid measure of appropriate and inappropriate emotional involvement were the aims of the current investigation.

Goals and Hypotheses of the Current Study

There were three goals of the current study. The first was to expand and adapt the previous coding system for emotional overinvolvement (Fredman et al., 2004) by including ratings for appropriate emotional involvement and making it applicable to a bipolar disorder population. This was accomplished by permitting separate ratings for appropriate and inappropriate emotional involvement with respect to the following clusters of behaviors: (a) <u>unsolicited advice giving or checking</u> regarding the patient's well-being but which, when performed excessively or inappropriately, might be viewed as <u>inappropriately intrusive</u>; (b) behaviors indicating the relative's <u>willingness to sacrifice his or her own well-being to promote the patient's well-being or to endure negative consequences as a result of the illness</u> but which, when performed excessively or inappropriately, might be viewed as <u>excessively self-sacrificing or accommodating</u>; and (c) behaviors that reflect <u>anxiety and concern regarding the patient's well-being</u> which, when performed excessively or inappropriately, might be viewed as <u>exaggeratedly emotional or melodramatic</u>. The coding system was

further adapted so that it was applicable to the family environment of bipolar disorder. This involved including examples of relatives' responses when discussing topics such as posthospitalization adjustment, medication management, the presence of affective disturbance in the patient, or the patient's roles and responsibilities and then incorporating an explanation of the ways in which these responses might be considered appropriate or inappropriate within the context of bipolar disorder specifically.

The second goal was to assess the new measure's reliability and construct validity in a sample of patients with bipolar disorder and their key relatives who participated in psychosocial treatment for bipolar disorder. This was addressed by examining the measure's interrater reliability and its associations with other measures of expressed emotion, namely, the Camberwell Family Interview ratings for EOI and criticism, to assess its convergent and discriminant validity, respectively. The third goal was to explore and evaluate the predictive validity of the emotional involvement coding system and construct in the same sample by assessing the impact of relatives' emotional involvement on the longitudinal course of manic and depressive symptoms over a two-year period.

Our hypotheses about emotional involvement and the family environment of bipolar disorder cluster within three domains: (1) how the behavioral scales for appropriate and inappropriate emotional involvement relate to each other; (2) how they relate to other measures of EE; and (3) how they relate to patient mood symptoms over time. With respect to how the scales relate to each other, we hypothesized that appropriate and inappropriate behaviors are related but distinct dimensions of the construct of emotional involvement; thus, the ratings should be significantly correlated with each other but not be isomorphic. Regarding the behavioral scales' relations to other measures of EE, we hypothesized that the

six ratings would measure emotional involvement and not criticism, expecting that the behavioral scales would tap the construct of emotional involvement rather than merely serving as a proxy for a strong affective response to living with an ill family member. We predicted, therefore, that the interactional ratings would not be significantly correlated with CFI-assessed criticism and that the correlations between the interactional ratings and CFI EOI would be larger than the correlations between the interactional ratings and CFI criticism.

With respect to the third goal, prediction of the clinical course of mood symptoms, we hypothesized that the presence of high levels of observed appropriate emotional involvement (i.e., appropriate intrusiveness, self-sacrifice, and emotional response) would predict decreases (i.e., improvement) in manic and depressive symptoms and that the presence of inappropriate observed emotional involvement (i.e., inappropriate intrusiveness, self-sacrifice, and emotional response) would predict lack of change (i.e., no improvement) or increases in (i.e., exacerbation of) mood symptoms over a two-year period.

CHAPTER II: METHODS

Participants

     Patients. Patients in the current investigation ($N = 115$) are a subsample of the adults who participated in one of two family-based treatment outcome studies conducted by Miklowitz and colleagues (Miklowitz, George, Richards, Simoneau, & Suddath, 2003; Miklowitz, Richards, George, Frank, Suddath, Powell et al., 2003; combined $N = 131$) as well as 14 patients who received family focused therapy for bipolar disorder ($N = 7$), interpersonal psychotherapy for bipolar disorder ($N = 3$), or psychoeducation about bipolar disorder plus crisis management ($N = 2$) not in the context of either of the two treatment outcome studies. The first treatment outcome study (Miklowitz, George et al.) was a randomized controlled trial to compare family-focused therapy with medication management for bipolar disorder to community management of bipolar disorder ($N = 101$). The second study (Miklowitz, Richards et al.) was an open trial of integrated family and individual therapy for bipolar disorder as an adjunct to medication management ($N = 30$).

     All patients received standard medications for bipolar disorder as administered by study-affiliated psychiatrists. The 115 participants selected for the current study represent all patients who had participated in a videotaped family interactional task (which is described subsequently) with at least one of their key care-giving relatives.[1] All family interactions were conducted prior to the initiation of study-based treatments.

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[1]Two participants from Miklowitz, George, et al. (2003) were not included in the current study because their problem-solving interactions were inaudible on videotape.

Individuals were included in the original treatment outcome studies if they met *DSM-IV* (American Psychiatric Association, 1994) criteria for bipolar disorder within the three months prior to the family interactional assessment, were willing to take mood stabilizing medications or antipsychotic agents, and had regular contact with a care-giving family member (≥4 hours per week). Patients were excluded from the study if they demonstrated signs of developmental disability, neurological disorder, or alcohol or substance use disorder within the previous six months. Patients were recruited while in the hospital as psychiatric inpatients being treated for a mood episode, or as outpatients following a referral from a physician. All participants gave written informed consent. The study was approved by the University of Colorado's Human Research Committee.

Eighty-four percent of the patients met criteria for bipolar I, and 16% met criteria for bipolar II. The mean age of patients in the current sample was 35.43 years (*SD* = 10.01, range = 18-65), and the average age of illness onset was 23.07 years (*SD* = 9.90, range 8-56). Mean number of prior illness episodes was 4.40 (*SD* = 3.73), and the average number of prior hospitalizations was 2.10 (*SD* = 3.25). Women composed 58% of the sample, and 7% of the sample was an ethnic minority.

Relatives. Data were collected from all adult relatives living with the patient or in regular contact with the patient (≥4 hours per week). Approximately half of the relatives were female (53%), and nearly two-thirds of the relatives (63%) were spouses or romantic partners. The remainder consisted of parents (31%) or an adult child or sibling (6%).

Measures

     Structured Clinical Interview for DSM-IV-Patient Version (SCID-P; First, Spitzer,

Gibbon, & Williams, 1995). Patients met *DSM-IV* (American Psychiatric Association, 1994)

criteria for bipolar I or bipolar II disorder with a manic, mixed, hypomanic, or depressive

episode within the three months prior to study entry, as assessed using the SCID-P. Interrater

reliabilities for SCID-P items ranged from 0.71 to 0.87 (Cohen's κ, p <.001).

     Schedule for Affective Disorders and Schizophrenia, Change Version (SADS-C;

Spitzer & Endicott, 1978). The SADS-C is a 36-item interview-based instrument designed to

assess the worst period of manic and depressive symptoms during a given study interval. The

SADS-C was administered to patients upon study entry (covering the three months prior to

study entry), one month after study entry and prior to the initiation of psychosocial

treatments, three, six, and nine months after study entry, and at 12, 18, and 24 months after

study entry. Items were rated from 1 (absent) to 7 (very extreme). Interrater reliability

assessed using intraclass correlations for SADS-C composite total affective symptoms, mania

scores, and depression scores ranged from 0.81 to 0.92 ($p < .001$ for all).

     Camberwell Family Interview (CFI; Vaughn & Leff, 1976a). The CFI is a 1-2 hour

semi-structured interview conducted with the relative of a psychiatric patient. The interview

is audiotaped and then scored to yield ratings of EOI, critical comments, hostility, warmth,

and positive comments. For the present study, only the EOI and criticism scores were used to

test the construct validity of the observational measure. EOI was scored on a single, global

scale that ranged from 0 (*none*) to 5 (*extremely high*). Interrater reliability using intraclass

correlations was good for EOI = .80 ($p < .001$). Criticism, which was rated as a frequency

count of criticisms made by the relative about the patient, also possessed good interrater reliability (.82, $p < .001$).

Direct Interactional Assessment. Family interactions were completed an average of 3.76 weeks ($SD = 5.24$) after relatives had participated in the CFI and 5.74 weeks ($SD = 5.73$) after patients' baseline symptoms had been assessed using the SCID-P. Each patient-relative dyad (or, in 12 cases, triad) engaged in two consecutively completed interactions, one in which the patient selected the topic and one in which the relative selected the topic. Patients and their family members were asked to discuss a problem in the family and to attempt to resolve it during the 10-minute interaction. Topics (i.e., whether the problem was generated by the patient or relative) were counterbalanced across interactions.

Emotional Involvement Observational Coding System. An adapted version of the observational coding system for emotional overinvolvement (Fredman et al., 2004) was created so that ratings for both appropriate emotional involvement and inappropriate emotional involvement (i.e., emotional overinvolvement) within the context of bipolar disorder could be made from the 10-minute pretreatment problem-solving interactions between patients and their care-giving relatives. Adaptation of the previous coding system resulted in a new behavioral observation measure of emotional involvement that included six rating scales designed to provide separate ratings for appropriate and inappropriate emotional involvement by relatives in the following behavioral domains: (a) unsolicited advice giving or checking on the patient (intrusiveness); (b) the relative's willingness to endure negative consequences as a result of the patient's illness or to sacrifice his or her own well-being to promote the patient's well being (self-sacrifice); and (c) concern for the patient's well being or identification with the patient (emotional response). Ratings were made on 1-5 scales in

which "1" indicated the absence of the behavior and "5" reflected an extremely high amount of the behavior.

The sample of 115 patients for the current study yielded a total of 230 patient-relative interactions. Eight of the 230 interactions were selected for training purposes. Ratings for these training interactions were based on consensus scores achieved between the principal investigator of the current investigation and either Dr. Baucom or Dr. Miklowitz with respect to appropriate and inappropriate emotional involvement by relatives in the context of bipolar disorder.

The rest of the interactions were coded by the principal investigator and an undergraduate research assistant, both of whom were uninformed as to relatives' CFI scores, patients' treatment conditions, and patients' SADS mania and depression scores. The principal investigator rated the 222 remaining interactions, and the reliability coder rated a random sample of nearly a third (33%) of these for reliability purposes. The ρ_Is (3, 1) (Shrout & Fleiss, 1979) were as follows: appropriate intrusiveness = .74, appropriate self-sacrifice = .78; appropriate emotional response = .79, inappropriate intrusiveness = .86, inappropriate self-sacrifice = .76, and inappropriate emotional response = .70. Due to the conservative nature of intraclass correlations as an estimate of interrater reliability, we also examined how close the two raters were using the Rater Agreement Index (RAI; Burry-Stock, Shaw, Laurie, & Chissom, 1996). RAIs for the six scales were .93, .92, .94, .97, .94, and .99, respectively, indicating excellent rater agreement. On average, for the five-point rating scales, the two raters were .29 points apart for appropriate intrusiveness, .30 points apart for appropriate self-sacrifice, .23 points apart for appropriate emotional response, .12 points apart for

inappropriate intrusiveness, .23 points apart for inappropriate self-sacrifice, and .05 points apart for inappropriate emotional response.

Procedures for Rater Training and Data Inclusion

The reliability coder received 10 hours of training on the construct of emotional involvement and the phenomenology and family environment of bipolar disorder prior to beginning the coding and received ongoing training throughout the remainder of the study to protect against coder drift. In cases where the primary coder and reliability coder disagreed, a consensus score was achieved and used as the final score.

In order to avoid introducing dependence into the data, only one relative per patient was used in the data analyses. For the 12 cases in which the interactions were triadic instead of dyadic, the relative who was rater higher in observed emotional involvement was selected for inclusion in the study. Relatives were assigned ratings for appropriate intrusiveness, self-sacrifice, and emotional response to the patient's well being and inappropriate intrusiveness, self-sacrifice, and emotional response for the patient-generated topic. They were also assigned six ratings for the relative-generated topic. In order to capture relatives' behavior in its most pronounced form during direct contact with patients, only the highest level of a relative's behavior during either of the two patient-relative interactions was included.[2] Paired t-tests revealed that ratings across the six scales did not differ significantly depending on whether the patient or the relative had selected the topic (all ts $< \pm1.68$, ps $\geq .10$). Thus, the relative's highest rating for each of the six scales across the two interactions was selected for the purposes of data analysis.

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[2]It would also have been possible to average the ratings across the patient- and relative-generated topics.

CHAPTER III: RESULTS

Descriptives for Emotional Involvement Scales

On average, ratings were somewhat low for observed emotional involvement in this sample. With a possible range from "1" (absent) to "5" (extreme), mean ratings for the six behavioral scales were as follows: 1.91 (SD = 1.08) for appropriate intrusiveness, 1.95 (SD = 0.96) for appropriate self-sacrifice, 1.88 (SD = 1.16) for appropriate emotional response, 2.01 (SD = 1.11) for inappropriate intrusiveness, 1.57 (SD = 1.08) for inappropriate self-sacrifice, and 1.51 (SD = 0.94) for inappropriate emotional response. These means are comparable to those observed in the prior study with respect to inappropriate emotional involvement. See Table 1 for displayed frequencies of these variables for the current study. The data were strongly positively skewed, and efforts to transform the variables to achieve normality were unsuccessful. To facilitate interpretation of effect sizes, parametric analyses are displayed. To confirm the pattern of findings, non-parametric analyses were also conducted, where possible, and compared to the parametric analyses. The patterns of results using parametric and non-parametric analyses were the same, unless otherwise noted.

Means and standard deviations for relatives' emotional involvement as a function of patients' gender, relatives' gender, and relative type are displayed in Tables 2 to 4, respectively. To facilitate the interpretation of effect sizes, correlations are also displayed. Relatives' levels of emotional involvement did not differ significantly as a function of whether the patient was male or female. However, female relatives were rated as significantly higher than male relatives on appropriate intrusiveness, appropriate self-

sacrifice, inappropriate emotional response, and CFI EOI. In addition, biological relatives (parents, siblings, adult children) demonstrated significantly higher levels of emotional involvement than did romantic partners on all scales with the exception of emotional response.[3]

Intercorrelation of Emotional Involvement Scales

The first set of questions concerned the extent to which observed intrusiveness, self-sacrifice, and emotional response to the patient are related but distinct aspects of the emotional involvement/overinvolvement construct. Specifically, we hypothesized that appropriate and inappropriate manifestations of emotional involvement would be moderately and significantly correlated with each other, both within a given behavioral domain (e.g., appropriate and inappropriate intrusiveness) and across behavioral domains (e.g., appropriate intrusiveness and appropriate self-sacrifice), but that the correlations would not be isomorphic. We did not have *a priori* hypotheses predicting how behaviors from different domains and appropriateness would relate to each other (e.g., appropriate intrusiveness and inappropriate self-sacrifice).

As shown in Table 5, appropriate and inappropriate intrusiveness were significantly correlated with each other, as were appropriate and inappropriate self-sacrifice and appropriate and inappropriate emotional response. Within the realm of appropriate behaviors, appropriate intrusiveness and appropriate self-sacrifice were moderately and significantly correlated with each other, but neither was significantly related to appropriate emotional response. Within the inappropriate behaviors, inappropriate intrusiveness and inappropriate self-sacrifice were both moderately and significantly correlated with

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[3]Although the parametric correlation was not significant ($r = -.17$, $p = .06$), the non-parametric correlation was ($r = -.19$, $p = .03$).

inappropriate emotional response but were not significantly related to each other. In addition, some behaviors were also related to other behaviors of a different domain and appropriateness. For instance, appropriate intrusiveness was significantly related to inappropriate self-sacrifice and inappropriate emotional response, appropriate self-sacrifice was significantly related to inappropriate intrusiveness and inappropriate emotional response, and appropriate emotional response was significantly related to inappropriate intrusiveness.

Associations Between Observed Emotional Involvement and CFI Scores

The second set of hypotheses concerned the extent to which the six behavioral scales related to CFI-assessed EOI and criticism and were intended to evaluate the measure's convergent and discriminant validity, respectively. Following the findings of Fredman et al. (2004) regarding inappropriate emotional involvement (i.e., emotional *over*involvement), we hypothesized that the behavioral ratings would be significantly correlated with CFI EOI but not with CFI criticism, which is a different construct.

To assess the measure's convergent validity, we first examined zero-order correlations between each of the six behavioral scales and CFI EOI. As displayed in Table 5, appropriate intrusiveness, appropriate self-sacrifice, and inappropriate emotional response each displayed significant associations with CFI EOI. To disentangle the unique contributions of these variables to the construct of emotional involvement as captured by the CFI EOI, we subsequently conducted a multiple regression in which CFI EOI was regressed simultaneously on each of these three predictors. As expected, the omnibus model was significant (*Adj. R^2* = .10, $F(3, 108)$ = 5.05, p = .003), but only inappropriate emotional response was significantly and uniquely related to CFI EOI (sr = .23, p = .01). Once the contribution of inappropriate emotional response was taken into account, neither appropriate

intrusiveness ($sr = .06$, $p = .53$) nor appropriate self-sacrifice ($sr = .14$, $p = .14$) contributed

unique variance to CFI EOI.

To evaluate the measure's discriminant validity and to determine whether emotional

involvement, as measured behaviorally, is merely a non-specific affective response to living

with a psychiatrically ill family member, we examined the extent to which the emotional

involvement interactional scales were correlated with CFI criticism. As shown in Table 5,

none of the zero-order correlations between the six behavioral scales and CFI criticism were

positive and significant. The sizes of the monotrait-heteromethod (same trait, different

method) correlation coefficients versus the heterotrait-heteromethod (different trait, different

method) correlation coefficients were formally compared according to procedures described

by Meng, Rosenthal, and Rubin (1992) for comparing correlation coefficients drawn from the

same sample. These comparisons yielded only two statistically significant contrasts: (a) the

inappropriate intrusiveness-CFI EOI correlation versus the inappropriate intrusiveness-CFI

criticism correlation ($p = .02$),[4] and (b) the inappropriate emotional response-CFI EOI

correlation versus the inappropriate emotional response-CFI criticism correlation ($p = .001$).

However, all contrasts were in the expected direction, and the contrasts between appropriate

intrusiveness-CFI EOI correlation vs. appropriate intrusiveness-CFI criticism was significant

at trend ($p = .08$), as was the contrast for appropriate self-sacrifice-CFI EOI vs. appropriate

self-sacrifice-CFI criticism ($p = .07$).

Modeling of Growth Trajectories for Mood Symptoms

The subset of 108 patients who received either family-focused therapy (FFT),

integrated family and individual therapy (IFIT), or crisis management (CM) were included

for the longitudinal analyses in order to compare the impact of relatives' emotional

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[4]The non-parametric contrast was not significant ($p = .17$).

involvement on growth trajectories for manic and depressive symptoms for patients who received CM versus those who received family-based treatment (FFT or IFIT). A multilevel modeling approach (Raudenbush & Bryk, 2002) was used to estimate linear trajectories of change in mood symptoms over time as a function of patient treatment group (CM vs. family-based treatment) and relatives' baseline emotional involvement.[5] This data analytic strategy was selected because it permits one to simultaneously estimate group-level fixed effects as well as random effects that describe individual-level deviation from the group fixed effects. In this investigation, the group-level fixed effects were, for example, a group-level intercept to describe the average starting point for manic symptoms across all patients, a group-level slope for the effect of time on manic symptoms, a group-level slope for the effect of treatment condition on manic symptoms, a group-level slope for the effect of emotional involvement on manic symptoms, a group-level slope for the effect of the interaction between time and treatment, a group-level slope for the effect of the interaction between time and emotional involvement, a group-level slope for the effect of the interaction between treatment and emotional involvement, plus a group-level slope for the effect of the three-way interaction between time, treatment, and emotional involvement on manic symptoms. The random effects were individual-level deviation from the group-level intercept (i.e., differences in starting points for mania across patients) and individual-level deviation from the group-level slope for the effect of time (i.e., differences in rates of change in manic symptoms over time across patients).

Following the strategy employed by Kim and Miklowitz (2004), who used a larger sample drawn from the same cohorts of patients, we first examined baseline patient demographic and illness history characteristics to determine which, if any, should be

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[5]Repeating the analyses using a quadratic function did not significantly improve model fit.

included as covariates in the longitudinal analyses. Across the three treatment groups, patients did not differ significantly from one another with respect to age, socio-economic status (SES), gender, ethnicity, number of prior episodes, age at onset, or number of prior hospitalizations ($ps > .29$), but they did differ with respect to years of education ($F(2, 104) = 8.90$, p < .001) and index episode polarity ($\chi^2 (4) = 10.13$, $p = .04$). Thus, years of education and index episode polarity were included as covariates when estimating slopes for mania and depression, as described subsequently.

Mania

An empty (i.e., intercept only) model was estimated using PROC MIXED in SAS 9.1 and, as displayed in Table 6, confirmed that observations were not independent of one another and that there was significant nesting in the data ($\rho_I = .16$). An unconditional growth model was subsequently conducted in which time was nested within patient, and random effects were estimated for both the intercept and the slope for time. As displayed in Table 7, there were significant fixed effects for the intercept and the slope for time but no significant covariance between the random intercept and random slope, indicating that there was no association between patients' level of mania at the beginning of the study and the rate at which their symptoms changed over the follow-up period. Because there were differences among the treatment groups with respect to years of education and index episode polarity at study entry, the unconditional growth model was repeated with these variables as covariates. However, neither covariate was significantly related to manic symptoms over time ($ps > .09$).

Next, a conditional growth model was estimated with treatment condition (control vs. family-based treatment) added as a level-2 predictor. As shown in Table 8, the main effects for time and treatment condition (CM vs. FFT/IFIT) were non-significant, and the two-way

time by treatment interaction was significant at trend ($p = .06$). To confirm the appropriateness of combining the two family-based treatment groups, the trajectories for mania were compared for the FFT and IFIT groups. This was accomplished using contrast coding and repeating the conditional model with the addition of a main effect for the FFT vs. IFIT treatment variable and a two-way interaction between time and the FFT vs. IFIT treatment variable. As expected, the two-way interaction between time and the FFT vs. IFIT treatment variable was not significant ($p = .81$), indicating that the slopes for the two family-based treatment groups did not differ from each other and that it was reasonable to collapse them into one treatment group.

In order to determine if the effect of treatment was impacted by relatives' level of emotional involvement (that is, whether relatives' emotional involvement moderated the moderation of treatment on the relation between time and manic symptoms), a series of conditional growth models were estimated, and significant three-way interactions between time, treatment, and the emotional involvement variables were probed. To facilitate interpretation of effects, the six observational emotional involvement variables and CFI EOI were initially examined in separate growth models for mania.

We hypothesized that the presence of appropriate observed emotional involvement (i.e., appropriate intrusiveness, self-sacrifice, and emotional response) would predict a decrease (i.e., improvement) in manic symptoms and that the presence of inappropriate observed emotional involvement (i.e., inappropriate intrusiveness, self-sacrifice, and emotional response) would predict lack of change in manic symptoms. Based on the findings of Kim and Miklowitz (2004), we did not expect CFI EOI to predict change in manic symptoms over time.

Results are displayed in Tables 9 to 15. As hypothesized, the three-way interaction between time, treatment, and inappropriate self-sacrifice was significant; the three-way interaction between time, treatment, and inappropriate emotional response also was significant. Furthermore, as expected, the three-way interaction between time, treatment, and CFI EOI was not significant. Contrary to expectation, however, the three-way interactions between time, treatment, and the appropriate emotional involvement variables were non-significant, as was the three-way interaction between time, treatment, and inappropriate intrusiveness.

The three-way interaction between time, treatment, and inappropriate self-sacrifice was probed *post hoc* such that time was the focal predictor and treatment and inappropriate self-sacrifice were the moderators. Using the pick-a-point approach, the effect of inappropriate self-sacrifice on time and treatment was examined in the context of low, medium, and high levels of inappropriate self-sacrifice (one standard deviation below the mean, at the mean, and one standard deviation above the mean of inappropriate self-sacrifice, respectively). Examination of the simple slopes revealed the following patterns of findings. At low levels of inappropriate self-sacrifice, the slope was negative and significant for both groups of patients ($\acute{\omega}_{cm} = -0.0094$, $p = .002$; $\acute{\omega}_{tx} = -0.0095$, $p = .0001$), suggesting that patients became significantly less manic over time and improved regardless of treatment condition. At medium levels of inappropriate self-sacrifice, the pattern of slopes began to change: the slope for patients in CM was negative but non-significant ($\acute{\omega} = -0.0009$, $p = .66$), indicating that they did not improve, whereas the slope for patients in family-based treatment was negative and significant ($\acute{\omega} = -0.0083$, $p < .0001$), indicating that these patients did experience a significant decrease in manic symptoms despite a moderate level of

inappropriate self-sacrifice by relatives. At high levels of inappropriate self-sacrifice, the difference in slopes for the two groups was most pronounced: for patients in CM, the slope was positive and nearly significant ($\acute{\omega} = 0.0076$, $p = .05$), whereas the slope for patients in family treatment was negative and significant ($\acute{\omega} = -0.0072$, $p = .002$). This suggests that patients in the CM group actually became *more* manic over time but that the patients in family-based treatment were able to improve, becoming significantly less manic over time, despite relatives' displaying high levels of inappropriate self-sacrifice at the beginning of the study. Graphical displays of these slopes across levels of inappropriate self-sacrifice are shown in Figures 1-3.

The three-way interaction between time, treatment, and inappropriate emotional response was also probed *post hoc* such that time was the focal predictor and treatment and inappropriate emotional response were the moderators. Using the pick-a-point approach, the effect of inappropriate emotional response on time and treatment was examined in the context of low, medium, and high levels of inappropriate emotional response (one standard deviation below the mean, at the mean, and one standard deviation above the mean of inappropriate emotional response, respectively). Examination of simple slopes revealed that, at low levels of inappropriate emotional response, slopes were negative and significant for both groups of patients ($\acute{\omega}_{cm} = -0.0096$, $p = .004$; $\acute{\omega}_{tx} = -0.0062$, $p = .01$), suggesting that patients became significantly less manic over time and improved, regardless of whether they received CM or family treatment. At medium levels of inappropriate emotional response, the two groups showed a difference with respect to change in manic symptoms over time: the slope for patients in CM was negative but non-significant ($\acute{\omega} = -0.0034$, $p = .11$), indicating no improvement in manic symptoms, whereas the slope for patients in family treatment was

negative and significant ($\acute{\omega} = -0.0085$, $p < .0001$), indicating a significant reduction in manic symptoms over the follow-up period. At high levels of inappropriate emotional response, a similar pattern was observed: patients in CM demonstrated a positive but non-significant slope ($\acute{\omega} = 0.0028$, $p = .36$), whereas the slope for patients in family treatment continued to be negative and significant ($\acute{\omega} = -0.0109$, $p < .0001$), meaning that patients who received CM did not improve but that patients in family-based treatment did become significantly less manic over time, despite the high levels of relatives' inappropriate emotional response initially. Graphical displays of these differences in slopes are shown in Figures 4-6.

As a test of the robustness of the significant three-way interactions for inappropriate self-sacrifice and inappropriate emotional response, the models for these two variables were each re-run with the five other observational emotional involvement variables entered as main effects. As displayed in Tables 16 and 17, when each model was re-run controlling for the other observed emotional involvement variables (e.g., for the inappropriate self-sacrifice model, appropriate intrusiveness, appropriate self-sacrifice, appropriate emotional response, inappropriate intrusiveness, and inappropriate emotional response were added to the model simultaneously), the three-way interactions remained significant.

Depression

Prior to fitting the conditional growth models for depressive symptoms, an intercept only model was estimated and, as displayed in Table 18, confirmed that there was significant nesting in the data ($\rho_I = .39$). Next, an unconditional growth model was conducted in which random effects were estimated for both the intercept and slope for time. As displayed in Table 19, there were significant fixed effects for the intercept and time, as well as significant negative covariance between the random intercept and random slope, indicating that patients

who started out more depressed improved less quickly over time. The unconditional growth model was repeated with the addition of the covariates of patients' years of education and index episode polarity. Gender was also included as a covariate in light of Kim and Miklowitz's (2004) observation that female patients showed higher levels of depression over time. Years of education was not a significant covariate ($p = .23$), but gender and index episode polarity were (ps $< .02$ -- regarding index episode polarity, patients who entered the study in a manic or hypomanic state demonstrated lower levels of depression throughout the follow-up period). Therefore, these variables were retained as covariates when the conditional growth models for depression were estimated.

A conditional growth model was estimated with treatment condition (crisis management vs. family-treatment) added as a level-2 predictor. As displayed in Table 20, the fixed effect for the two-way time X treatment interaction was significant, as were the effects of gender and index episode polarity as covariates, suggesting that, above and beyond the effects of gender and index episode polarity on depressive symptoms, patients who received family-based treatment became significantly less depressed over time compared to those who received CM. As demonstrated with the growth trajectories for mania, the two family-based treatment groups did not differ from each other over time with respect to trajectories for depression ($p = .60$).

Paralleling the approach to modeling the growth trajectories for mania, a series of conditional growth models were estimated to determine if the moderation of treatment on the relation between time and depressive symptoms varied as a function of relatives' observed emotional involvement. The effects of the six interactional variables and CFI EOI were examined in separate growth models to facilitate interpretation of effects, and significant

three-way interactions between time, treatment, and emotional involvement were probed *post hoc*.

As with mania, we hypothesized that higher levels of appropriate observed emotional involvement (i.e., appropriate intrusiveness, self-sacrifice, and emotional response) would be associated with more improvement with respect to depressive symptoms and that that higher levels of inappropriate emotional involvement (i.e., inappropriate intrusiveness, self-sacrifice, and emotional response) would be associated with less improvement in depressive symptoms. Following the findings of Kim and Miklowitz (2004), we did not expect CFI EOI to predict change in depressive symptoms over time.

As displayed in Table 22, the three-way interaction between time, treatment, and appropriate self-sacrifice was significant, but none of the three-way interactions with the other emotional involvement variables, including CFI EOI, were (see Tables 21, 23-27).

The three-way interaction between time, treatment, and appropriate self-sacrifice was probed such that time was the focal predictor and treatment and appropriate self-sacrifice were the moderators. Using the pick-a-point approach, the effect of appropriate self-sacrifice on time and treatment was examined in the context of low, medium, and high levels of appropriate self-sacrifice (one standard deviation below the mean, at the mean, and one standard deviation above the mean of appropriate self-sacrifice, respectively). Examination of results revealed that, at low levels of appropriate self-sacrifice, the slope was positive and non-significant for patients in CM ($\acute{\omega}$ = 0.0025, *p* = .34) but negative and significant for patients in family-based treatment ($\acute{\omega}$ = -0.0103, *p* < .0001), meaning that patients in CM did not improve with respect to their depressive symptoms whereas patients in treatment did. At moderate levels of appropriate self-sacrifice, the slopes for the two groups remained

different: the slope for patients in CM was negative but non-significant ($\acute{\omega}$ = -0.0018, p = .34), but the slope for patients in family treatment was negative and significant ($\acute{\omega}$ = -0.0088, p < .0001), indicating that, even as relatives' appropriate self-sacrifice increased from low to medium, patients who were not in family-based treatment did not experience a significant decrease in depressive symptoms whereas the patients in family-based treatment did become significantly less depressed over time. At high levels of appropriate self-sacrifice, the slopes for the two groups became more similar: for patients in both groups, slopes were negative and significant ($\acute{\omega}_{cm}$ = -0.0061, p = .04; $\acute{\omega}_{tx}$ = -0.0073, p = .001), suggesting that patients improved, becoming significantly less depressed over time, regardless of whether they received family-based treatment or not. Graphical displays of these patterns are shown in Figures 7-9.

To test of the robustness of the significant three-way interaction for appropriate self-sacrifice, the conditional growth model was repeated with the five other observational emotional involvement variables entered as main effects. As displayed in Table 28, when the model was re-run controlling for the other observed emotional involvement variables (i.e., appropriate intrusiveness, appropriate emotional response, inappropriate intrusiveness, inappropriate self-sacrifice, and inappropriate emotional response), the three-way interaction remained significant.

CHAPTER IV: DISCUSSION

The goals of the present study were (a) to adapt the previous coding system for emotional overinvolvement (Fredman et al., 2004) by including ratings for appropriate emotional involvement and making it applicable to a bipolar disorder population; (b) to assess the new measure's reliability, convergent validity, and discriminant validity in a sample of patients with bipolar disorder and their key relatives who participated in family-based psychosocial treatment for bipolar disorder; and (c) to explore and evaluate the predictive validity of the emotional involvement coding system and construct in the same sample by assessing the impact of relatives' emotional involvement on the course of manic and depressive symptoms over a two-year period.

In keeping with the first goal of this project, a substantial focus of this investigation was subjecting the existing coding system to a major evolution by differentiating between appropriate and inappropriate emotional involvement while retaining the distinctness of the behavioral domains of intrusiveness, self-sacrifice, and emotional response. This represents a conceptual shift from the way that psychopathology researchers have historically studied the family environments of psychiatric populations in two respects. First, there has been a tendency to pathologize high levels of engagement by relatives and to focus on the negative behaviors that relatives perform rather than on the positive ones. Indeed, the scale for measuring relatives' engagement with patients on the CFI is not "emotional involvement (EI)" but rather "emotional *over*involvement (EOI)," implying that any intense emotional or behavioral reactions to the illness are inappropriate. In contrast, this study was undertaken

with the impression that when living with a loved one suffering from a severe form of psychopathology, significant involvement by family members might be quite appropriate, even indicated, and thus, worth investigating explicitly.

Second, the field has traditionally conducted observational research on the family environment of various forms of psychopathology in a de-contextualized manner. That is, observational researchers typically use coding systems that are not specific to the given psychiatric condition under study and, therefore, do not permit coders to make ratings for relatives' behaviors on the basis of what would be considered reasonable or adaptive in the context of that particular disorder. Perhaps as a result of this, observational coding of patient-family interactions has not tended to be a robust means of predicting outcome in psychiatric populations. For instance, the KPI (Hahlweg & Conrad, 1983), a widely employed observational coding system in the area of psychopathology and family functioning, has been quite helpful in establishing the concurrent validity of the CFI (Chambless et al., 1999; Hooley, 1986; Simoneau et al., 1998; Hahlweg, 2004), demonstrating that relatives who are critical of patients during the CFI are indeed critical during face-to-face interactions with patients. However, the KPI has rarely, if ever, predicted treatment outcome in a sample of psychiatric patients (D. L. Chambless, personal communication, April 6, 2006; K. Hahlweg, personal communication, April 12, 2006). One reason for this might be that the KPI provides a simple frequency count of behaviors displayed by patients and relatives during a problem-solving interaction (e.g., criticisms, agreements, disagreements) rather than permitting a global assessment of the reasonableness, or unreasonableness, of the relatives' behaviors within the context of that particular psychiatric condition.

In light of these considerations and consistent with the field's movement towards disorder-specific couple and family interventions for various forms of psychopathology (Baucom, Shoham, Mueser, Daiuto, & Stickle, 1998; Snyder & Whisman, 2003), we assessed both appropriate and inappropriate emotional involvement among the relatives of individuals with bipolar disorder by devising and employing a disorder-specific observational coding system. This involved taking into account the psychopathology and phenomenology of bipolar disorder, the ways that relationship functioning might be impacted by the disorder, and the reasonableness or unreasonableness of relatives' behaviors in response to living with a loved one who suffers from bipolar disorder. To be able to train coders unfamiliar with the emotional involvement construct and the ways that it might operate in the context of bipolar disorder, training of raters involved not only readings on the construct of emotional involvement and its behavioral manifestations (e.g., Fredman et al., 2004) but also extensive education about the psychopathology of bipolar disorder and the relationship issues that it can engender (e.g., Miklowitz & Goldstein, 1997; Miklowitz & Morris, 2003).

Results from the present investigation suggest that this approach has the potential to be a fruitful means of investigating the family environment of a given form of psychopathology. For instance, findings not only support the new measure's reliability, convergent validity, and discriminant validity but also provide potential insights about the CFI and the impact of family functioning on the longitudinal course of bipolar disorder. With respect to the second goal of the study (assessment of the new measure's reliability, convergent validity, and discriminant validity), interrater reliability was good to excellent across all six scales (.70 or higher, with raters less than half a point apart on each scale), and patterns of associations with CFI EOI and criticism supported the measure's convergent and

discriminant validity, respectively. This suggests that, with extensive consideration of the

disorder-specific issues relevant to the psychiatric disorder in question and a sufficient

amount of time invested for training coders, it is possible to transport such a coding system

from one population (e.g., anxiety disorders) to another (e.g., major mood disorder such as

bipolar disorder). Furthermore, it also appears that it is feasible to reliably and specifically

measure relatives' appropriate and inappropriate emotional involvement rather than merely

capturing a strong, non-specific affective response to living with a severely psychiatrically ill

family member.

The pattern of results obtained from assessing the interactional measure's convergent

validity vis-à-vis the CFI also provides an alternative framework for thinking about what the

CFI EOI score represents. As noted by other investigators (Chambless et al. 1999; Fredman

et al., 2004; King, 2000; Wearden et al., 2000; Wiedemann et al., 2002), emotional

involvement, as assessed by the CFI, appears to be a heterogeneous construct, assessing

different behaviors (intrusiveness, self-sacrifice, and emotional response) and their

appropriateness or inappropriateness in unspecified ways. For instance, in the present study,

CFI EOI was significantly and uniquely associated with inappropriate emotional response,

but it also shared variance with appropriate intrusiveness and appropriate self-sacrifice.

Thus, it appears that the CFI-EOI score represents an amalgam of both functional and

dysfunctional reactions to the patient's illness, and this may be one reason that it did not

predict outcome in this sample or in a number of previous studies (e.g., Chambless &

Steketee, 1999; Tarrier, Sommerfield, & Pilgrim, 1999; O'Farrell, Hooley, Fals-Stewart, &

Cutter, 1998).

In contrast, and in keeping with the third goal of this investigation (to explore and evaluate the predictive validity of the emotional involvement coding system in this sample), we found that the observational coding system, which yielded separate ratings for the different behavioral aspects of the emotional involvement construct as well as their appropriateness or inappropriateness, did predict outcome in this sample. Accordingly, this lends additional support to the notion that the interpersonal environments of patients with bipolar disorder do have prognostic significance, particularly in the absence of family-based psychosocial treatment (Cohen, Hammen, Henry, & Daley, 2004; Johnson, Winett, Meyer, Greenhouse, & Miller, 1999; Johnson, Meyer, Winett, & Small, 2000; Miklowitz, Goldstein, Nuechterlein, Snyder, & Mintz, 1988; Kim & Miklowitz, 2004; O'Connell, Mayo, Eng, Jones, & Gabel, 1985; O'Connell, Mayo, Flatow, Cuthbertson, & O'Brien, 1991; Priebe, Wildgrube, & Müller-Oerlinghausen, 1989). In this sample, we observed that, in the absence of psychosocial treatment, relatives' appropriate self-sacrifice had an impact on patients' recovery from depression: at low and moderate levels of relatives' appropriate self-sacrifice, patients did not improve, but at high levels of relatives' appropriate self-sacrifice, patients did show significant decreases in their depressive symptoms over time. We also observed that relatives' inappropriate behaviors had an impact on patients' manic symptoms. Specifically, patients receiving standard community care (CM) showed significant improvement in their manic symptoms when relatives were low in inappropriate self-sacrifice, no change when relatives displayed moderate levels of inappropriate self-sacrifice, and deterioration when relatives displayed high levels of inappropriate self-sacrifice. Relatives' inappropriate emotional response also predicted the course of manic symptoms for this group of patients: at low levels of inappropriate emotional response, patients in CM

34

showed significant decreases in mania but at moderate and high levels of inappropriate emotional response, they did not improve.

By disaggregating the emotional involvement construct by use of six different interactional ratings, it was also possible to observe polarity-specific associations between relatives' baseline emotional involvement behaviors and the trajectory of patients' mood symptoms. Interestingly, the polarity-specific association between relatives' appropriate self-sacrifice and patients' depressive symptoms in the absence of family-based psychosocial treatment in this study parallels findings from other studies noting that relatives' social support predicted improvements in levels of bipolar depression but not mania (Johnson et al., 1999; Johnson et al., 2000) and that bipolar patients with low perceived social support were more likely to have a depressive recurrence, but not a manic recurrence, over a one-year period (Cohen et al., 2004). Whether appropriate self-sacrifice, as coded in the current study, is a proxy for esteem support (e.g., an indirect communication by the relative to the patient, "I care about you and think that you're worth sacrificing for"), a representation of instrumental support (e.g., taking over household chores and responsibilities in an effort to buffer the patient from stress and, thereby, promote recovery from a depressive episode), a means of facilitating behavioral activation (e.g., "I don't really like to exercise but am willing to keep you company and do it if exercising will help your mood"), or some combination thereof, is not known. However, pursuing this inquiry further in a future study could be a potentially informative and clinically useful area of investigation, as it could help to elucidate putative mechanisms through which appropriate self-sacrifice influences depressive symptoms in the context of bipolar disorder.

The polarity-specific effect of inappropriate self-sacrifice and inappropriate emotional response on manic symptoms, but not depressive symptoms, in the absence of family-based treatment also warrants further exploration. Having observed that high levels of criticism predicted greater severity of both manic and depressive symptoms over time, Kim and Miklowitz (2004) suggested that relatives' criticism might serve to precipitate emotion dysregulation among patients with bipolar disorder. It is possible that, with respect to mania, criticism potentiates activation in a psychiatric population that is perhaps better served by behavioral and emotional containment. It could be that inappropriate self-sacrifice and inappropriate emotional response, although not an expression of relatives' negative feelings about the patients' behaviors or personality as criticism is, also indirectly or directly contribute to overactivation of behavior and emotion in this group of vulnerable patients. For instance, by accommodating to maladaptive patient behaviors such as substance abuse or reckless spending with no expectation that the patient desist from these behaviors or take responsibility for them, as in the case of inappropriate self-sacrifice, relatives might be enabling or reinforcing patients for engaging in counterproductive behaviors that interfere with mood hygiene and affective stability. Similarly, the expression of high levels of inappropriate emotional distress related to the patient's well being (e.g. "You have to get better because when you're a mess, I can't function!"), as in the case of inappropriate emotional response, might be overly arousing, when, in fact, what the patient actually needs is emotional dampening.

In contrast to patients in CM, patients receiving family-based psychosocial treatment became significantly less depressed regardless of relatives' levels of appropriate self-sacrifice. They also became significantly less manic regardless of relatives' levels of

inappropriate self-sacrifice or inappropriate emotional response. Taken together, this suggests that family-focused therapy facilitated improvement in patients' mood symptoms even when relatives initially did not demonstrate enough "good" emotional involvement behaviors (e.g., appropriate self-sacrifice) or, conversely, when they initially displayed too much "bad" emotional involvement (e.g., inappropriate self-sacrifice/accommodation to the illness or inappropriate emotional response/melodramatic reaction to the patient's illness).

This is likely because family-focused therapy for bipolar disorder (which is also a core component of IFIT) is a disorder-specific intervention that takes into account (a) the phenomenology of bipolar disorder and the substantial interdependence between patient functioning and relative well-being; and (b) the potentially dysfunctional behaviors that relatives might display in the context of the illness, such as nagging the patient, enabling of maladaptive patients behaviors, and being enmeshed with the patient; but also (c) the potentially valuable role that family members can play in aiding patients' recovery by doing things such as encouraging medication compliance, helping monitor patients' moods, and buffering patients from stress while they are recovering from an episode. The resulting clinically informed intervention, which consists of a combination of psycho-education and communication and problem-solving skills, appears to have compensated for relatives initially not showing enough adaptive behaviors (e.g., appropriate self-sacrifice) and to have blunted the impact of or protected against the initial presence of maladaptive behaviors, such as inappropriate self-sacrifice and emotional response. As a result, family-based treatment appears to have facilitated the family's being a resource to recently recovered and, therefore, vulnerable patients rather than a liability to them.

In light of the differential impact of the emotional involvement variables in the context of standard community care (CM) versus family-based psychosocial intervention, there are several potential clinical implications from this investigation. First, although it is premature to make broad-based treatment recommendations given that these findings await replication and cross-validation in other samples of individuals with bipolar disorder, it nonetheless might be worthwhile to begin sensitizing clinicians to family members' self-sacrificing behaviors and distress related to patients' well being, in addition to their attending to negative affective tones in patients' interpersonal milieus (e.g., as in the case of criticism). By familiarizing them with the construct of emotional involvement, clinicians might well be able to pick up and assess the intensity of relatives' inappropriate self-sacrificing or emotional behaviors in the context of psychosocial treatment planning for an individual with bipolar disorder, even if they do not formally employ observational coding as conducted in the current investigation.

Second, and relatedly, these clinical impressions could be used to identify high-risk families (i.e., those high in criticism, inappropriate self-sacrifice, inappropriate emotional response and/or those low in appropriate self-sacrifice) and steer them towards family-based treatment. Given the difficulty of providing family-focused therapy on a large-scale basis and the observation that some patients did experience significant improvement in mood symptoms even in the absence of psychosocial family-based treatment, the use of indicated family-based interventions for high risk family systems might be an expedient and efficient use of limited clinical resources in a way that benefits families most in need.

Because this was an archival data set, there are also several limitations associated with this study. First, patients and relatives were each asked to pick a problem in the family

and to discuss it. In some of the interactions, patients and their family members discussed the illness, but, in others, topics focused on areas of family functioning unrelated to the illness (e.g., in the case of couples, dealing in-laws, child-rearing, spending leisure time together versus apart). As a result, relatives might not have been afforded the opportunity to display the full extent of their thoughts, feelings, and behaviors in reaction to the illness. This is in contrast to the CFI, during which the relative is asked explicitly to discuss how his or her relationship with the patient has been affected by the illness during the three months prior to hospitalization. In addition, there were only two methods of measuring emotional involvement: the currently adapted observational coding system and the CFI. There were no patient or relative self-report measures assessing relatives' efforts to promote the patients' well being, their adaptation to the illness, and/or their emotional reactions to the patients.

In the future, with respect to measurement, in particular, it might be helpful to ask patients and relatives to discuss the illness specifically in order to facilitate examination of how the family system has adapted to the illness, as observed during direct patient-relative interactions, and to include patient and relative self-report measures of relatives' efforts to be facilitative (e.g., by offering unsolicited advice or checking on the patient), ways that relatives' have accommodated to the patient's illness, and relatives' emotional reactions in response to the illness in order to capture as much variance as possible in the emotional involvement construct.

It also might be useful to replicate the current methodology using another sample of individuals with bipolar disorder, a sample of patients with major depressive disorder, or a group of individuals with borderline personality disorder. This would help determine whether the pattern of findings obtained in the current study is merely an artifact of this

particular sample, an epiphenomenon of bipolar disorder, or a phenomenon that generalizes across disorders characterized by affect dysregulation. Like bipolar disorder, major depression and borderline personality disorder both involve considerable disturbance in mood and are associated with significant impairments in psychosocial functioning and interpersonal relationships. These impairments can contribute to substantial family burden and interdependence between patient functioning and family functioning. Thus, for many families, it might be quite reasonable for family members to display high levels of engagement in order to promote patients' well being and, in turn, maintain some degree of equilibrium within the family system. However, the extent to which relatives' specific emotional involvement behaviors impact the clinical course of these other disorders is not known. For instance, are low to moderate levels of relatives' appropriate self-sacrifice (as compared to high levels of appropriate self-sacrifice) associated with less improvement in depressive symptoms in the context of unipolar depression, as they are in the context of bipolar depression? Use of the observational coding system for emotional involvement, as adapted for major depressive disorder, might help to elucidate the circumstances under which relatives' care-taking behaviors are helpful or, alternatively, unhelpful, to patients suffering from this condition.

Use of the current methodology might also help to explain the unexpected finding by Hooley and Hoffman (1999) that higher levels of EOI were associated with *better* outcomes for patients hospitalized for borderline personality disorder. The authors offered a compelling *post hoc* interpretation of this finding by suggesting that high levels of emotional distress related to the patient's well being might have been extremely validating and, therefore, therapeutic to individuals suffering from a disorder like borderline personality

disorder, which is characterized by chronic feelings of self-invalidation. Using a measure such as the observational coding system for emotional involvement, as adapted for borderline personality disorder, could confirm whether high levels of appropriate or inappropriate emotional response account for this finding or whether it is due to some other element of the emotional involvement construct, such as appropriate self-sacrifice.

In summary, observational coding of emotional involvement using separate ratings for appropriate and inappropriate intrusiveness, self-sacrifice, and emotional response is a novel and potentially valuable method for investigating the family environment of psychiatric disorders. As a group, clinical researchers who study the family environment of psychopathology have invested tremendous time and energy into identifying and understanding the ways that family functioning is impacted by and, in turn, affects the longitudinal course of various forms of psychopathology. Traditionally, the focus of this research has been on criticism and other negative behaviors displayed by relatives. Less attention has been devoted to family members' efforts to be caring and helpful in response to one family member's psychiatric difficulties but which also may have strong, negative unintended consequences, such as the present study's finding that high levels of inappropriate self-sacrifice predict exacerbation of manic symptoms. By providing a conceptual framework for thinking about appropriate and inappropriate emotional involvement in a disorder-specific manner, this investigation represents a conceptual shift in the area of family psychopathology research and offers researchers an alternative methodology when attempting to isolate relevant family variables and to clarify their impact on treatment outcome for a given psychiatric disorder. Clinically informed and disorder-relevant insights derived from this type of an approach might then have the potential to offer

guidance to family therapists about which behaviors to address when working with families

of patients with major psychiatric disorders and, hopefully, prove beneficial to both patients

and their care-giving relatives.

Table 1

Frequency Distribution of Observed Emotional Involvement (N = 115)

	Frequencies					
Rating	Appropriate Intrusiveness	Appropriate Self-Sacrifice	Appropriate Emotional Response	Inappropriate Intrusive-ness	Inappropriate Self-Sacrifice	Inappropriate Emotional Response
1 (absent)	55	47	63	52	84	82
2	29	35	20	26	10	15
3	20	26	19	23	11	12
4	8	6	9	12	6	4
5 (extreme)	3	1	4	2	4	2

Table 2

Means and Standard Deviations for Observed Emotional Involvement Partitioned by Patient Gender (N = 115)

	Male Mean (SD)	Female Mean (SD)	t	SE_t	r
Behavioral Ratings (appropriate)					
Intrusiveness	2.06	1.81	1.26	0.20	-.12
	(1.02)	(1.12)			
Self-Sacrifice	2.13	1.82	1.68	0.18	-.16
	(.98)	(.94)			
Emotional Response	1.90	1.87	0.14	0.22	-.01
	(1.06)	(1.23)			
Behavioral Ratings (inappropriate)					
Intrusiveness	2.00	2.01	-0.07	0.21	.01
	(1.05)	(1.16)			
Self-Sacrifice	1.67	1.51	0.78	0.21	-07
	(1.06)	(1.11)			
Emotional Response	1.67	1.40	1.49	0.18	-.14
	(1.02)	(0.87)			
CFI EOI	2.00	1.84	0.63	0.25	-.06
	(1.22)	(1.35)			

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

44

Table 3

Means and Standard Deviations for Observed Emotional Involvement Partitioned by Relative Gender (N = 115)

	Male Mean (SD)	*Female Mean (SD)*	*t*	SE_t	*r*
Behavioral Ratings (appropriate)					
Intrusiveness	1.65	2.15	-2.53	0.20	.23*
	(0.91)	(1.17)			
Self-Sacrifice	1.74	2.13	-2.21	0.18	.20*
	(0.89)	(0.99)			
Emotional Response	1.72	2.02	-1.37	0.22	.13
	(1.13)	(1.18)			
Behavioral Ratings (inappropriate)					
Intrusiveness	1.80	2.20	-1.95	0.21	.18
	(1.00)	(1.18)			
Self-Sacrifice	1.41	1.72	-1.59	0.20	.15
	(0.90)	(1.21)			
Emotional Response	1.15	1.84	-4.38	0.16	.37**
	(0.45)	(1.13)			
CFI EOI	1.47	2.28	-3.46	0.23	.31**
	(1.17)	(1.28)			

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

Table 4

Means and Standard Deviations for Observed Emotional Involvement Partitioned by Relative Type (N = 115)

	Non-Spouse Mean (SD)	Spouse Mean (SD)	t	SE_t	r
Behavioral Ratings (appropriate)					
Intrusiveness	2.37 (1.20)	1.64 (0.91)	3.47	0.21	-.33**
Self-Sacrifice	2.16 (0.90)	1.82 (0.98)	1.87	0.18	-.17
Emotional Response	1.95 (1.15)	1.83 (1.16)	0.54	0.22	-.05
Behavioral Ratings (inappropriate)					
Intrusiveness	2.42 (1.16)	1.76 (1.01)	3.17	0.21	-.29**
Self-Sacrifice	1.95 (1.40)	1.35 (0.77)	2.62	0.23	-.27**
Emotional Response	2.02 (1.14)	1.21 (0.63)	4.30	0.19	-.42**
CFI EOI	2.55 (1.31)	1.53 (1.13)	4.36	0.23	-.38**

*p < .05. **p < .01

Table 5

Correlations Between Six Behavioral Observations Scales and CFI EOI and Criticism

Measure	App. INT	App. SS	App. ER	Inapp. INT	Inapp. SS	Inapp. ER	CFI-EOI	CFI-Criticism
Appropriate INT	(.74)	.39**	. 02	.25**	.38**	.30**	.20*	.02
Appropriate SS		(.78)	.14	.26**	.31**	.25**	.24*	.05
Appropriate ER			(.79)	.25**	.04	.32**	.09	-.07
Inappropriate INT				(.86)	.03	.34**	.14	-.13
Inappropriate SS					(.76)	.34**	.13	.15
Inappropriate ER						(.70)	.30**	-.09
CFI-EOI							(.80)	.06
CFI-Criticism								(.82)

Note. Due to missing data for the CFI items, *N* ranged from 112 to 115. Reliability coefficients are on the diagonal.

INT = Intrusiveness; SS = Self-Sacrifice; ER = Emotional Response; CFI = Camberwell Family Interview; EOI = Emotional Overinvolvement

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

Means and standard deviations (in parentheses) for the variables presented in the table are as follows: 1.91 (1.08) 1.95 (0.96) 1.88 (1.16) 2.01 (1.11) 1.57 (1.08) 1.51 (0.94) 1.91 (1.29) 3.91 (4.06)

Table 6

Summary of Mixed Model Analysis for Prediction of Mania Growth Trajectory: Intercept-Only Model (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.14	0.057	37.43**
Random Effects	u	SE_u	z
Intercept	0.19	0.048	4.05**
Residual	0.98	0.055	17.81**

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

Table 7

Summary of Mixed Model Analysis for Prediction of Mania Growth Trajectory:
Unconditional Growth Model (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.35	0.069	33.90**
Time	-0.0059	0.0014	-4.16**
Random Effects	u	SE_u	z
Intercept	0.20	0.074	2.67**
Covariance of Intercept and Time	-0.0016	0.0013	-1.20
Time	0.000074	0.000031	2.42**
Residual	0.88	0.053	16.46**

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

Table 8

Summary of Mixed Model Analysis for Prediction of Mania Growth Trajectory Conditioned on Treatment (N = 108)

Fixed Effects	γ	SE_{γ}	t
Intercept	2.30	0.11	20.67**
Time	-0.0029	0.0021	-1.35
Treatment	0.083	0.14	0.58
Time X Treatment	-0.0055	0.0029	-1.93
Random Effects	u	SE_{u}	z
Intercept	0.20	0.075	2.73**
Covariance of Intercept and Time	-0.0016	0.0013	-1.25
Time	0.000072	0.000030	2.38**
Residual	0.887	0.053	16.47**

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

Table 9

Summary of Mixed Model Analysis for Prediction of Mania Growth Trajectory Conditioned on Treatment and Appropriate Intrusiveness (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.30	0.11	20.56**
Time	-0.0029	0.0021	-1.35
Treatment	0.083	0.14	0.61
Appropriate Intrusiveness	0.072	0.095	0.76
Time X Treatment	-0.0055	0.0029	-1.88
Time X Appropriate Intrusiveness	0.00073	0.0018	0.41
Treatment X Appropriate Intrusiveness	0.013	0.13	0.10
Time X Treatment X Appropriate Intrusiveness	-0.00071	0.0027	-0.26
Random Effects	u	SE_u	z
Intercept	0.21	0.076	2.73**
Covariance of Intercept and Time	-0.0018	0.0014	-1.36
Time	0.000077	0.000032	2.43**
Residual	0.87	0.053	16.46**

*$p < .05$, **$p < .01$

Table 10

Summary of Mixed Model Analysis for Prediction of Mania Growth Trajectory Conditioned on Treatment and Appropriate Self-Sacrifice (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.32	0.11	20.87**
Time	-0.0030	0.0022	-1.37
Treatment	0.071	0.14	0.50
Appropriate Self-Sacrifice	0.20	0.12	1.59
Time X Treatment	-0.0055	0.0029	-1.90
Time X Appropriate Self-Sacrifice	0.0010	0.0024	-0.42
Treatment X Appropriate Self-Sacrifice	-0.26	0.15	-1.72
Time X Treatment X Appropriate Self-Sacrifice	0.0015	0.0030	0.49
Random Effects	u	SE_u	z
Intercept	0.20	0.075	2.62**
Covariance of Intercept and Time	-0.0016	0.0013	-1.24
Time	0.000076	0.000032	2.40**
Residual	0.87	0.053	16.45**

*$p < .05$, **$p < .01$

Table 11

Summary of Mixed Model Analysis for Prediction of Mania Growth Trajectory Conditioned on Treatment and Appropriate Emotional Response (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.31	0.11	20.30**
Time	-0.0029	0.0022	-1.33
Treatment	0.077	0.15	0.53
Appropriate Emotional Response	0.32	0.10	0.31
Time X Treatment	-0.0055	0.0029	-1.87
Time X Appropriate Emotional Response	0.0008	0.0020	-0.04
Treatment X Appropriate Emotional Response	0.012	0.13	0.09
Time X Treatment X Appropriate Emotional Response	-0.00070	0.0026	-0.27
Random Effects	u	SE_u	z
Intercept	0.22	0.077	2.80**
Covariance of Intercept and Time	-0.0018	0.0014	-1.32
Time	0.000077	0.000032	2.44**
Residual	0.87	0.053	16.47**

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

Table 12

Summary of Mixed Model Analysis for Prediction of Mania Growth Trajectory Conditioned on Treatment and Inappropriate Intrusiveness (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.31	0.11	20.45**
Time	-0.0031	0.0022	-1.42
Treatment	0.079	0.14	0.55
Inappropriate Intrusiveness	-0.066	0.11	-0.59
Time X Treatment	-0.0053	0.0029	-1.83
Time X Inappropriate Intrusiveness	0.0016	0.0021	0.76
Treatment X Inappropriate Intrusiveness	0.10	0.14	0.74
Time X Treatment X Inappropriate Intrusiveness	-0.0031	0.0026	-1.19
Random Effects	u	SE_u	z
Intercept	0.21	0.077	2.80**
Covariance of Intercept and Time	-0.0017	0.0013	-1.30
Time	0.000075	0.000031	2.40**
Residual	0.87	0.053	16.48**

*$p < .05$, **$p < .01$

Table 13

Summary of Mixed Model Analysis for Prediction of Mania Growth Trajectory Conditioned on Treatment and Inappropriate Self-Sacrifice (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.31	0.12	20.09**
Time	-0.00091	0.0021	-0.43
Treatment	0.072	0.15	0.49
Inappropriate Self-Sacrifice	0.52	0.13	0.39
Time X Treatment	-0.0074	0.0028	-2.70
Time X Inappropriate Self-Sacrifice	0.0077	0.0025	3.08
Treatment X Inappropriate Self-Sacrifice	-0.035	0.15	-0.23
Time X Treatment X Inappropriate Self-Sacrifice	-0.0067	0.0029	-2.31

Random Effects	u	SE_u	z
Intercept	0.21	0.077	2.78**
Covariance of Intercept and Time	-0.0017	0.0013	-1.37
Time	0.000054	0.000027	1.99*
Residual	0.87	0.053	16.52**

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

Table 14

Summary of Mixed Model Analysis for Prediction of Mania Growth Trajectory Conditioned on Treatment and Inappropriate Emotional Response (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.30	0.11	20.57**
Time	-0.0034	0.0021	-1.62
Treatment	0.095	0.14	0.66
Appropriate Emotional Response	-0.014	0.13	-0.11
Time X Treatment	-0.0051	0.0028	-1.83
Time X Appropriate Emotional Response	0.0064	0.0024	2.64*
Treatment X Appropriate Emotional Response	0.19	0.16	1.21
Time X Treatment X Appropriate Emotional Response	-0.0089	0.0031	-2.91**
Random Effects	u	SE_u	z
Intercept	0.21	0.076	2.77**
Covariance of Intercept and Time	-0.0018	0.0013	-1.40
Time	0.000067	0.000029	2.32*
Residual	0.87	0.052	16.54**

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

56

Table 15

Summary of Mixed Model Analysis for Prediction of Mania Growth Trajectory Conditioned on Treatment and CFI EOI (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.26	0.11	19.88**
Time	-0.0024	0.0023	-1.04
Treatment	0.14	0.15	0.98
CFI EOI	-0.15	0.097	-1.59
Time X Treatment	-0.0061	0.0030	-2.04*
Time X CFI EOI	0.0018	0.0019	0.94
Treatment X CFI EOI	0.25	0.12	2.07*
Time X Treatment X CFI EOI	-0.0029	0.0024	-1.22
Random Effects	u	SE_u	z
Intercept	0.19	0.074	2.53**
Covariance of Intercept and Time	-0.0016	0.0013	-1.19
Time	0.000078	0.000032	2.42**
Residual	0.89	0.054	16.25**

*$p < .05$, **$p < .01$

Table 16

Summary of Mixed Model Analysis for Prediction of Mania Growth Trajectory Conditioned on Treatment and Inappropriate Self-Sacrifice While Controlling for Appropriate Intrusiveness, Appropriate Self-Sacrifice, Appropriate Emotional Response, Inappropriate Intrusiveness, and Inappropriate Emotional Response (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.30	0.12	19.65**
Time	-0.00093	0.0021	-0.44
Treatment	0.088	0.15	0.59
Inappropriate Self-Sacrifice	-0.012	0.15	-0.08
Time X Treatment	-0.0074	0.0028	-2.67*
Time X Inappropriate Self-Sacrifice	0.0076	0.0025	3.05**
Treatment X Inappropriate Self-Sacrifice	0.0070	0.16	0.04
Time X Treatment X Inappropriate Self-Sacrifice	-0.0066	0.0029	-2.30*
Appropriate Intrusiveness	0.028	0.063	0.45
Appropriate Self-Sacrifice	-0.023	0.064	-0.36
Appropriate Emotional Response	0.028	0.051	0.55
Inappropriate Intrusiveness	-0.048	0.054	-0.89
Inappropriate Emotional Response	0.083	0.072	1.16
Random Effects	u	SE_u	z
Intercept	0.21	0.077	2.75**
Covariance of Intercept and Time	-0.0016	0.0013	-1.28
Time	0.000053	0.000027	1.98*
Residual	0.87	0.053	16.52**

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

Table 17

Summary of Mixed Model Analysis for Prediction of Mania Growth Trajectory Conditioned on Treatment and Inappropriate Emotional Response While Controlling for Appropriate Intrusiveness, Appropriate Self-Sacrifice, Appropriate Emotional Response, Inappropriate Intrusiveness, and Inappropriate Self-Sacrifice (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.32	0.11	20.25**
Time	-0.0033	0.0021	-1.57
Treatment	0.070	0.15	0.47
Inappropriate Emotional Response	-0.057	0.14	-0.41
Time X Treatment	-0.0051	0.0028	-1.84*
Time X Inappropriate Emotional Response	0.0064	0.0024	2.64*
Treatment X Inappropriate Emotional Response	0.22	0.17	1.32
Time X Treatment X Inappropriate Emotional Response	-0.0090	0.0031	-2.94**
Appropriate Intrusiveness	0.050	0.062	0.81
Appropriate Self-Sacrifice	-0.042	0.064	-0.65
Appropriate Emotional Response	0.018	0.052	0.35
Inappropriate Intrusiveness	-0.047	0.055	-0.85
Inappropriate Self-Sacrifice	0.062	0.060	1.03
Random Effects	u	SE_u	z
Intercept	0.22	0.079	2.82**
Covariance of Intercept and Time	-0.0019	0.0013	-1.47
Time	0.000066	0.000029	2.31*
Residual	0.87	0.052	16.54**

*$p < .05$, **$p < .01$

59

Table 18

Summary of Mixed Model Analysis for Prediction of Depression Growth Trajectory: Intercept-Only Model (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.45	0.068	36.00**
Random Effects	u	SE_u	z
Intercept	0.39	0.069	5.69**
Residual	0.63	0.036	17.75**

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

Table 19

Summary of Mixed Model Analysis for Prediction of Depression Growth Trajectory:
Unconditional Growth Model (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.64	0.085	31.19**
Time	-0.0056	0.0013	-4.36**
Random Effects	u	SE_u	z
Intercept	0.58	0.11	5.50**
Covariance of Intercept and Time	-0.0042	0.0013	-3.20**
Time	0.000086	0.000023	3.77**
Residual	0.51	0.031	16.53**

*$p < .05$, **$p < .01$

Table 20

Summary of Mixed Model Analysis for Prediction of Depression Growth Trajectory Conditioned on Treatment While Controlling for Gender and Manic Index Episode (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.64	0.16	16.38**
Time	-0.0014	0.0019	-0.75
Gender	0.28	0.12	2.25*
Manic Index Episode	-0.59	0.12	-4.80**
Treatment	0.21	0.15	1.39
Time X Treatment	-0.0073	0.0025	-2.87**
Random Effects	u	SE_u	z
Intercept	0.39	0.083	4.80**
Covariance of Intercept and Time	-0.0030	0.0011	-2.65**
Time	0.000079	0.000022	3.64**
Residual	0.51	0.031	16.55**

$*p < .05, **p < .01$

Table 21

Summary of Mixed Model Analysis for Prediction of Depression Growth Trajectory Conditioned on Treatment and Appropriate Intrusiveness While Controlling for Gender and Manic Index Episode (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.64	0.16	16.21**
Gender	0.29	0.13	2.29*
Manic Index Episode	-0.59	0.12	-4.81**
Time	-0.0014	0.0019	-0.74
Treatment	0.21	0.15	1.37
Appropriate Intrusiveness	-0.0065	0.11	-0.06
Time X Treatment	-0.0070	0.0025	-2.79**
Time X Appropriate Intrusiveness	3.36e-6	0.0016	0.00
Treatment X Appropriate Intrusiveness	-0.0072	0.14	-0.51
Time X Treatment X Appropriate Intrusiveness	0.0038	0.0024	1.61

Random Effects	u	SE_u	z
Intercept	0.41	0.085	4.80**
Covariance of Intercept and Time	-0.0030	0.0011	-2.68**
Time	0.000076	0.000021	3.55**
Residual	0.51	0.031	16.56**

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

Table 22

Summary of Mixed Model Analysis for Prediction of Depression Growth Trajectory Conditioned on Treatment and Appropriate Self-Sacrifice While Controlling for Gender and Manic Index Episode (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.67	0.16	16.49**
Gender	0.27	0.13	2.18*
Manic Index Episode	-0.60	0.12	-4.85**
Time	-0.0018	0.0019	-0.95
Treatment	0.20	0.15	1.28
Appropriate Self-Sacrifice	0.23	0.13	1.79
Time X Treatment	-0.0070	0.0025	-2.81**
Time X Appropriate Self-Sacrifice	-0.0042	0.0021	-2.01*
Treatment X Appropriate Self-Sacrifice	-0.33	0.16	-2.04*
Time X Treatment X Appropriate Self-Sacrifice	0.0060	0.0026	2.28*
Random Effects	u	SE_u	z
Intercept	0.39	0.082	4.71**
Covariance of Intercept and Time	-0.0026	0.0011	-2.39*
Time	0.000074	0.000021	3.46**
Residual	0.51	0.031	16.55**

$*p < .05, **p < .01$

Table 23

Summary of Mixed Model Analysis for Prediction of Depression Growth Trajectory Conditioned on Treatment and Appropriate Emotional Response While Controlling for Gender and Manic Index Episode (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.69	0.16	16.56**
Gender	0.25	0.12	1.99*
Manic Index Episode	-0.59	0.12	-4.78**
Time	-0.0017	0.0019	-0.87
Treatment	0.18	0.15	1.19
Appropriate Emotional Response	0.19	0.11	1.74
Time X Treatment	-0.0072	0.0026	-2.78**
Time X Appropriate Emotional Response	-0.0016	0.0018	-0.90
Treatment X Appropriate Emotional Response	-0.18	0.14	-1.33
Time X Treatment X Appropriate Emotional Response	0.0023	0.0023	1.02

Random Effects	u	SE_u	z
Intercept	0.39	0.082	4.71**
Covariance of Intercept and Time	-0.0026	0.0011	-2.39*
Time	0.000074	0.000021	3.46**
Residual	0.51	0.031	16.55**

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

Table 24

Summary of Mixed Model Analysis for Prediction of Depression Growth Trajectory Conditioned on Treatment and Inappropriate Intrusiveness While Controlling for Gender and Manic Index Episode (N = 108)

Fixed Effects	γ	SE_{γ}	t
Intercept	2.63	0.16	16.26**
Gender	0.27	0.12	2.19*
Manic Index Episode	-0.59	0.12	-4.78**
Time	-0.0010	0.0019	-0.54
Treatment	0.22	0.15	1.46
Inappropriate Intrusiveness	0.17	0.12	1.48
Time X Treatment	-0.0077	0.0025	-3.03**
Time X Inappropriate Intrusiveness	-0.0031	0.0019	-1.68
Treatment X Inappropriate Intrusiveness	-0.23	0.14	-1.60
Time X Treatment X Inappropriate Intrusiveness	0.0043	0.0023	1.88

Random Effects	u	SE_{u}	z
Intercept	0.39	0.084	4.72**
Covariance of Intercept and Time	-0.0028	0.0011	-2.51*
Time	0.000077	0.000022	3.54**
Residual	0.51	0.031	16.53**

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

Table 25

Summary of Mixed Model Analysis for Prediction of Depression Growth Trajectory Conditioned on Treatment and Inappropriate Self-Sacrifice While Controlling for Gender and Manic Index Episode (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.62	0.16	15.99**
Gender	0.30	0.13	2.38*
Manic Index Episode	-0.57	0.12	-4.66**
Time	-0.0010	0.0019	-0.52
Treatment	0.22	0.16	1.40
Inappropriate Self-Sacrifice	0.14	0.15	-0.10
Time X Treatment	-0.0078	0.0026	-3.04**
Time X Inappropriate Self-Sacrifice	-0.0016	0.0023	0.68
Treatment X Inappropriate Self-Sacrifice	-0.00083	0.17	0.00
Time X Treatment X Inappropriate Self-Sacrifice	0.0010	0.0027	0.39
Random Effects	u	SE_u	z
Intercept	0.41	0.087	4.79**
Covariance of Intercept and Time	-0.0031	0.0011	-2.72*
Time	0.000074	0.000021	3.50**
Residual	0.51	0.031	16.54**

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

Table 26

Summary of Mixed Model Analysis for Prediction of Depression Growth Trajectory Conditioned on Treatment and Inappropriate Emotional Response While Controlling for Gender and Manic Index Episode (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.61	0.17	15.75**
Gender	0.32	0.13	2.50*
Manic Index Episode	-0.59	0.12	-4.74**
Time	-0.0015	0.0019	-0.78
Treatment	0.23	0.15	1.47
Inappropriate Intrusiveness	0.12	0.14	0.87
Time X Treatment	-0.0072	0.0026	-2.79**
Time X Inappropriate Intrusiveness	0.00067	0.0022	0.30
Treatment X Inappropriate Intrusiveness	-0.92	0.17	-0.54
Time X Treatment X Inappropriate Intrusiveness	-0.0027	0.0028	-0.10

Random Effects	u	SE_u	z
Intercept	0.41	0.085	4.77**
Covariance of Intercept and Time	-0.0032	0.0012	-2.70**
Time	0.000083	0.000023	3.67**
Residual	0.51	0.031	16.55**

*$p < .05$, **$p < .01$

Table 27

Summary of Mixed Model Analysis for Prediction of Depression Growth Trajectory Conditioned on Treatment and CFI EOI While Controlling for Gender and Manic Index Episode (N = 108)

| Fixed Effects	γ	SE_γ	t
Intercept	2.64	0.16	16.29**
Gender	0.29	0.12	2.35*
Manic Index Episode	-0.58	0.12	-4.76**
Time	-0.0014	0.0020	-0.68
Treatment	0.20	0.16	1.29
CFI EOI	0.032	0.10	0.31
Time X Treatment	-0.0074	0.0027	-2.78**
Time X CFI EOI	-0.00015	0.0017	-0.09
Treatment X CFI EOI	0.083	0.13	0.65
Time X Treatment X CFI EOI	-0.00012	0.0021	-0.05
Random Effects	u	SE_u	z
Intercept	0.39	0.086	4.59**
Covariance of Intercept and Time	-0.0032	0.0012	-2.66**
Time	0.000085	0.000023	3.61**
Residual	0.52	0.032	16.28**

*$p < .05$, **$p < .01$

Table 28

Summary of Mixed Model Analysis for Prediction of Depression Growth Trajectory Conditioned on Treatment and Appropriate Self-Sacrifice While Controlling for Gender, Manic Index Episode, Appropriate Intrusiveness, Appropriate Emotional Response, Inappropriate Intrusiveness, Inappropriate Self-Sacrifice, and Inappropriate Emotional Response (N = 108)

Fixed Effects	γ	SE_γ	t
Intercept	2.69	0.17	16.23**
Gender	0.28	0.13	2.13*
Manic Index Episode	-0.59	0.13	-4.67**
Time	-0.0017	0.0019	-0.92
Treatment	0.16	0.15	1.04
Appropriate Self-Sacrifice	0.22	0.14	1.63
Time X Treatment	-0.0070	0.0025	-2.83**
Time X Appropriate Self-Sacrifice	-0.0042	0.0021	-2.04*
Treatment X Appropriate Self-Sacrifice	-0.36	0.17	-2.17*
Time X Treatment X Appropriate Self-Sacrifice	0.0060	0.0026	2.30*
Appropriate Intrusiveness	-0.047	0.070	-0.07
Appropriate Emotional Response	0.073	0.058	1.26
Inappropriate Intrusiveness	-0.017	0.061	-0.28
Inappropriate Self-Sacrifice	0.071	0.068	1.04
Inappropriate Emotional Response	0.027	0.081	0.34
Random Effects	u	SE_u	z
Intercept	0.41	0.087	4.69**
Covariance of Intercept and Time	-0.0028	0.0011	-2.48*
Time	0.000074	0.000021	3.47**
Residual	0.51	0.031	16.56**

*$p < .05$, **$p < .01$

Figure 1: Three-Way Interaction Between Time, Treatment, and Inappropriate Self-Sacrifice
(Manic Symptoms at Low Inappropriate Self-Sacrifice)
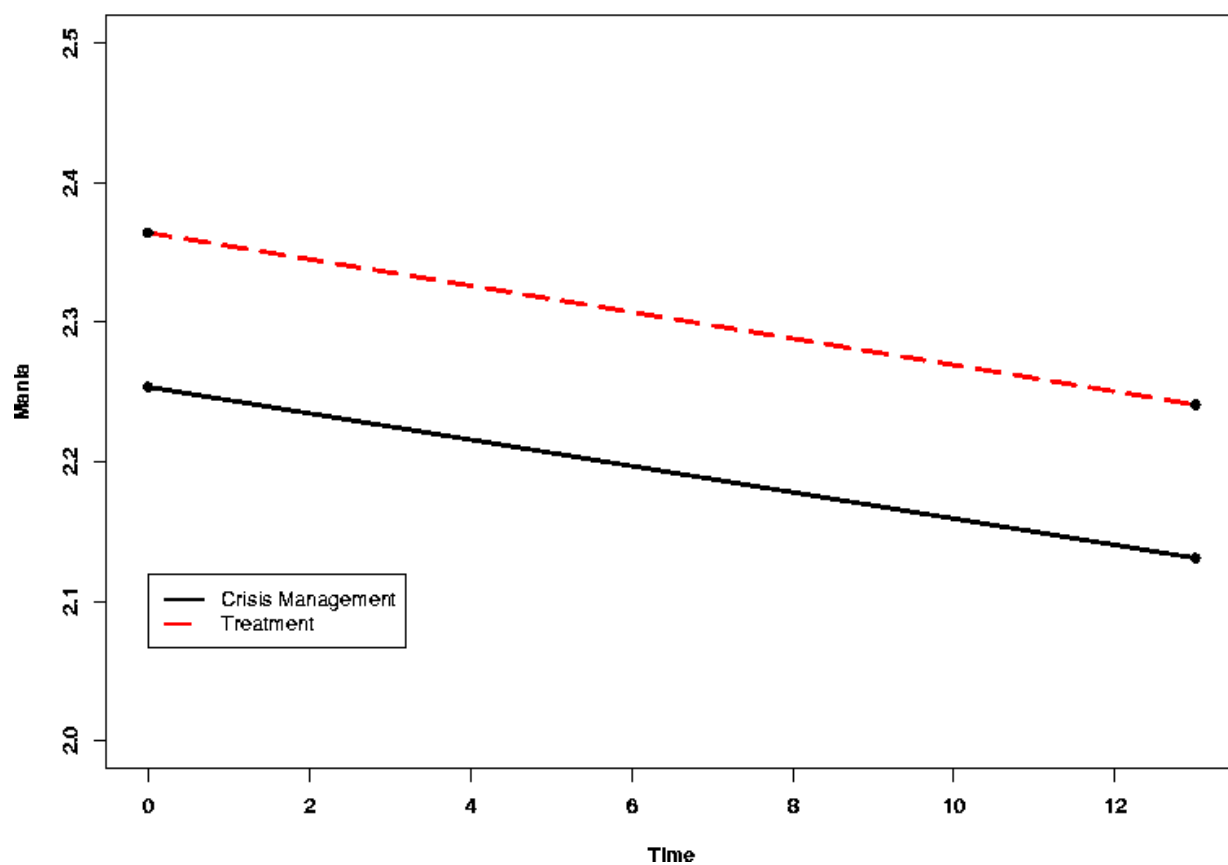
Figure 2: Three–Way Interaction Between Time, Treatment, and Inappropriate Self–Sacrifice
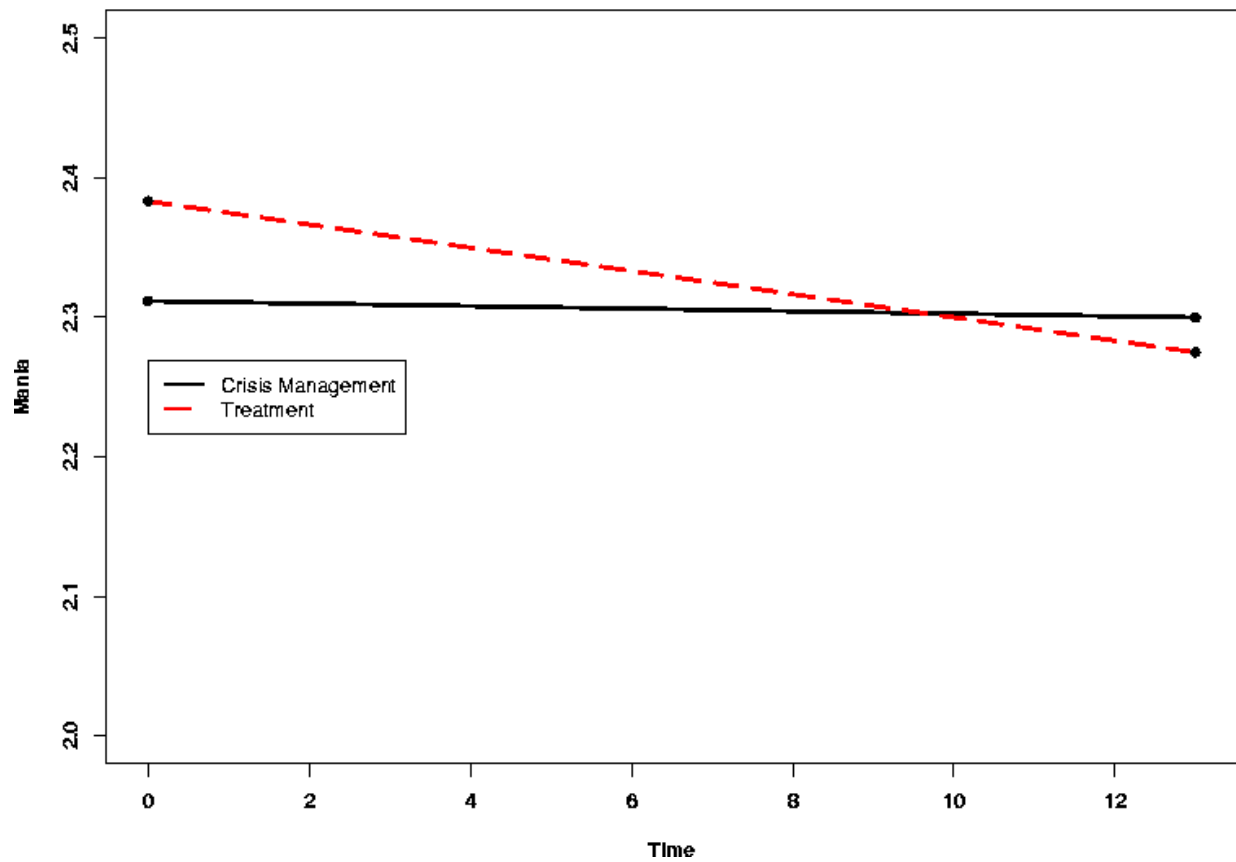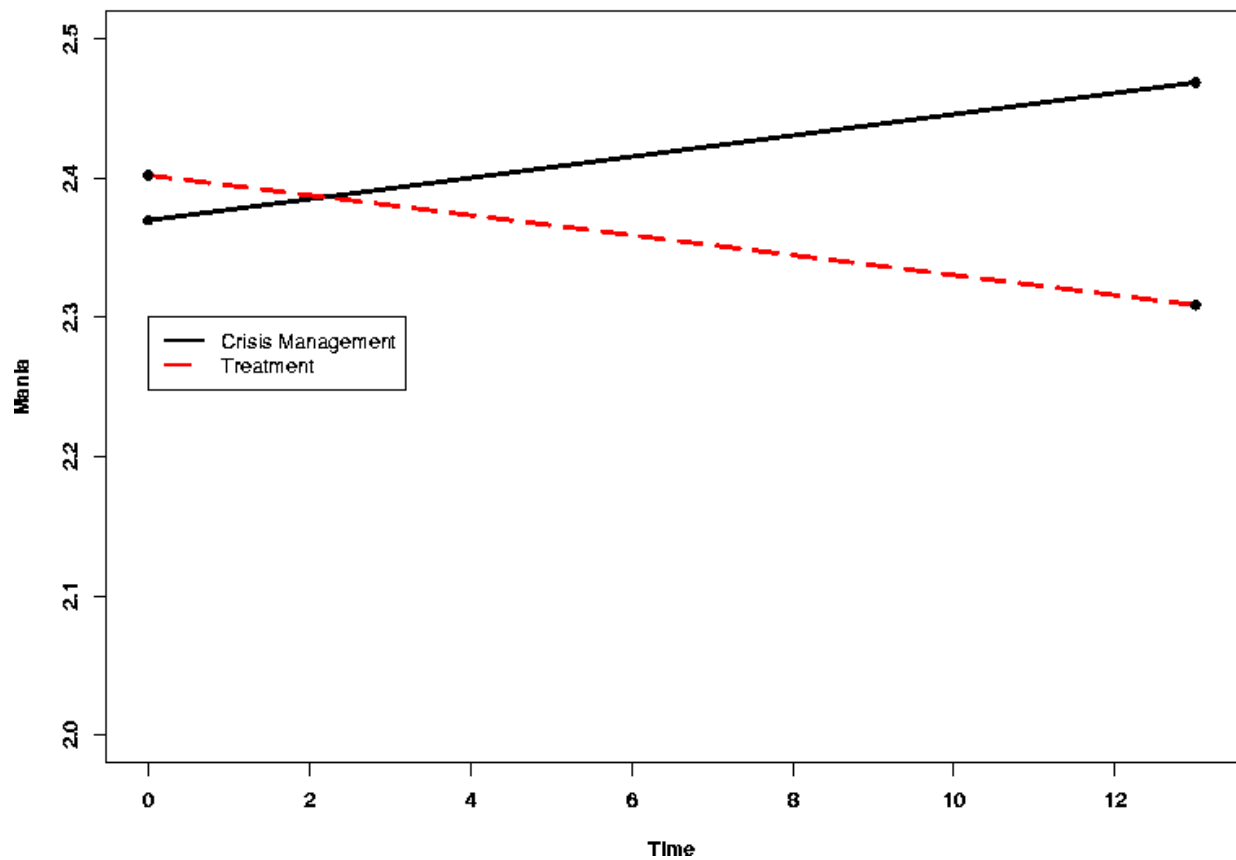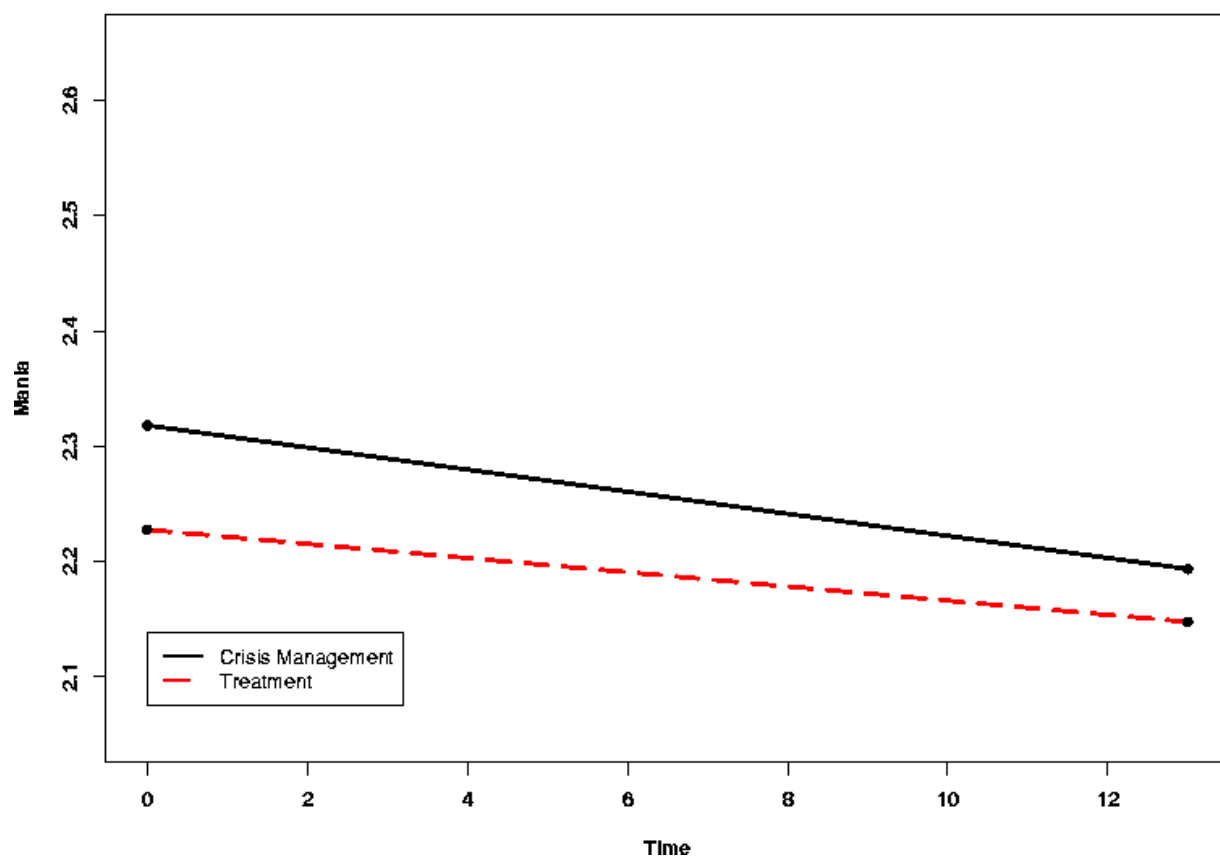(Manic Symptoms at Mean of Inappropriate Self–Sacrifice)

Figure 3: Three-Way Interaction Between Treatment, Time, and Inappropriate Self-Sacrifice
(Manic Symptoms at High Inappropriate Self-Sacrifice)

Figure 4: Three–Way Interaction Between Time, Treatment, and Inappropriate Emotional Response (Manic Symptoms at Low Inappropriate Emotional Response)

Figure 5: Three–Way Interaction Between Time, Treatment, and Inappropriate Emotional Response
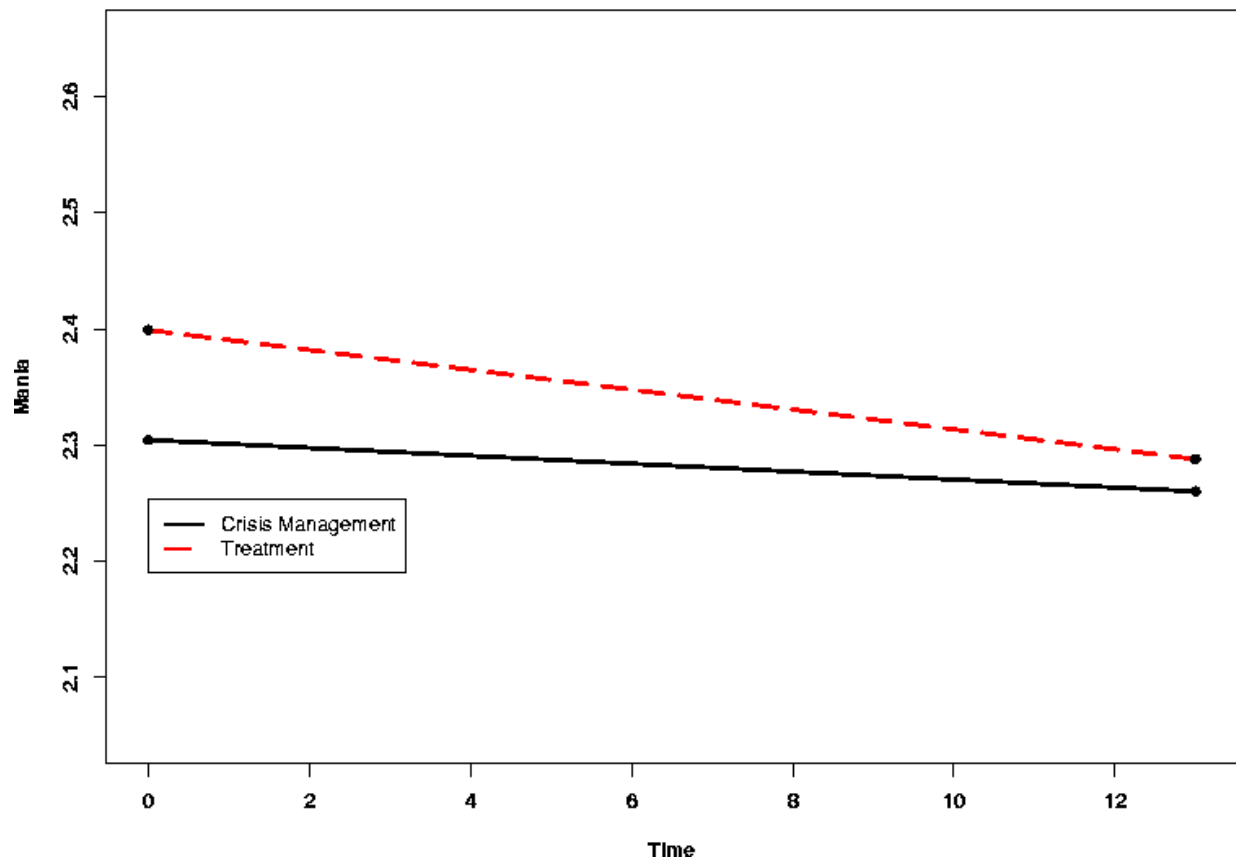(Manic Symptoms at Mean of Inappropriate Emotional Response)

Figure 6: Three-Way Interaction Between Time, Treatment, and Inappropriate Emotional Response
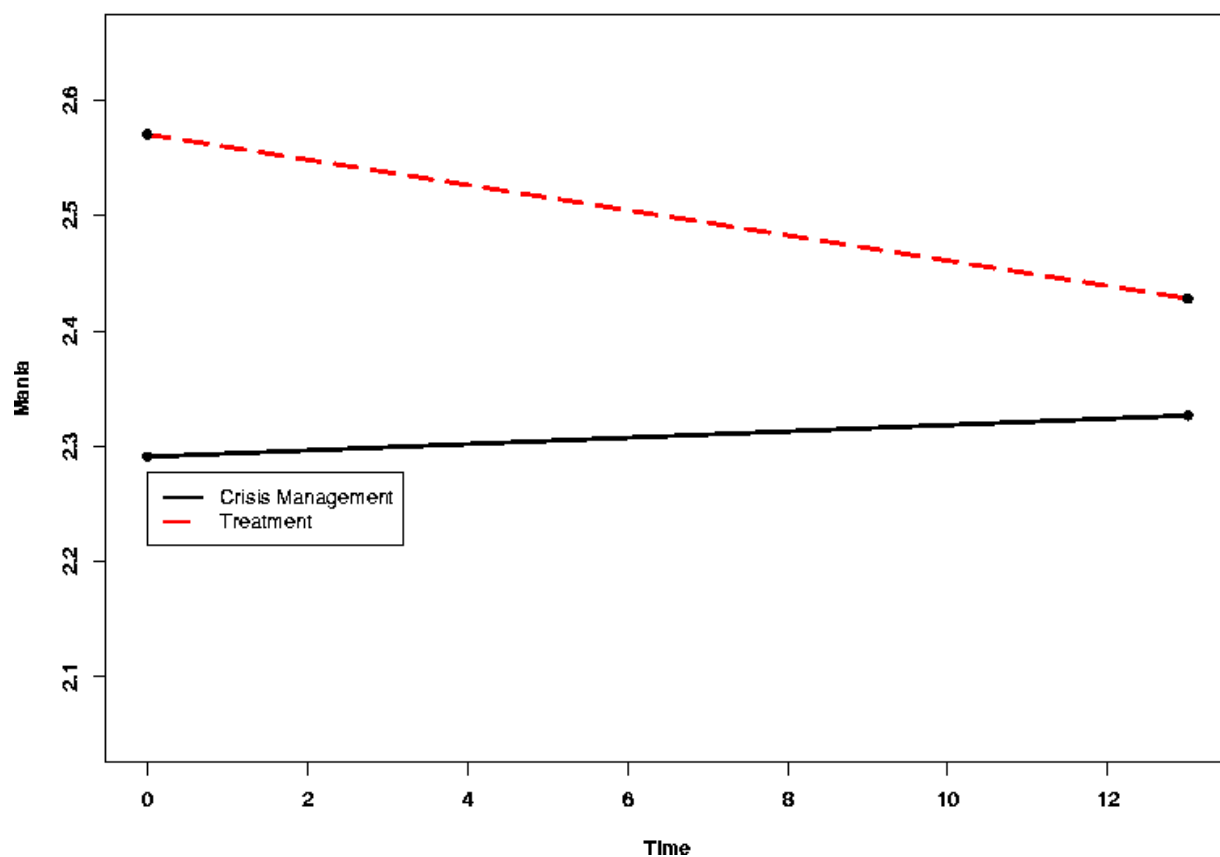(Manic Symptoms at High Inappropriate Emotional Response)

Figure 7: Three–Way Interaction Between Time, Treatment, and Appropriate Self–Sacrifice
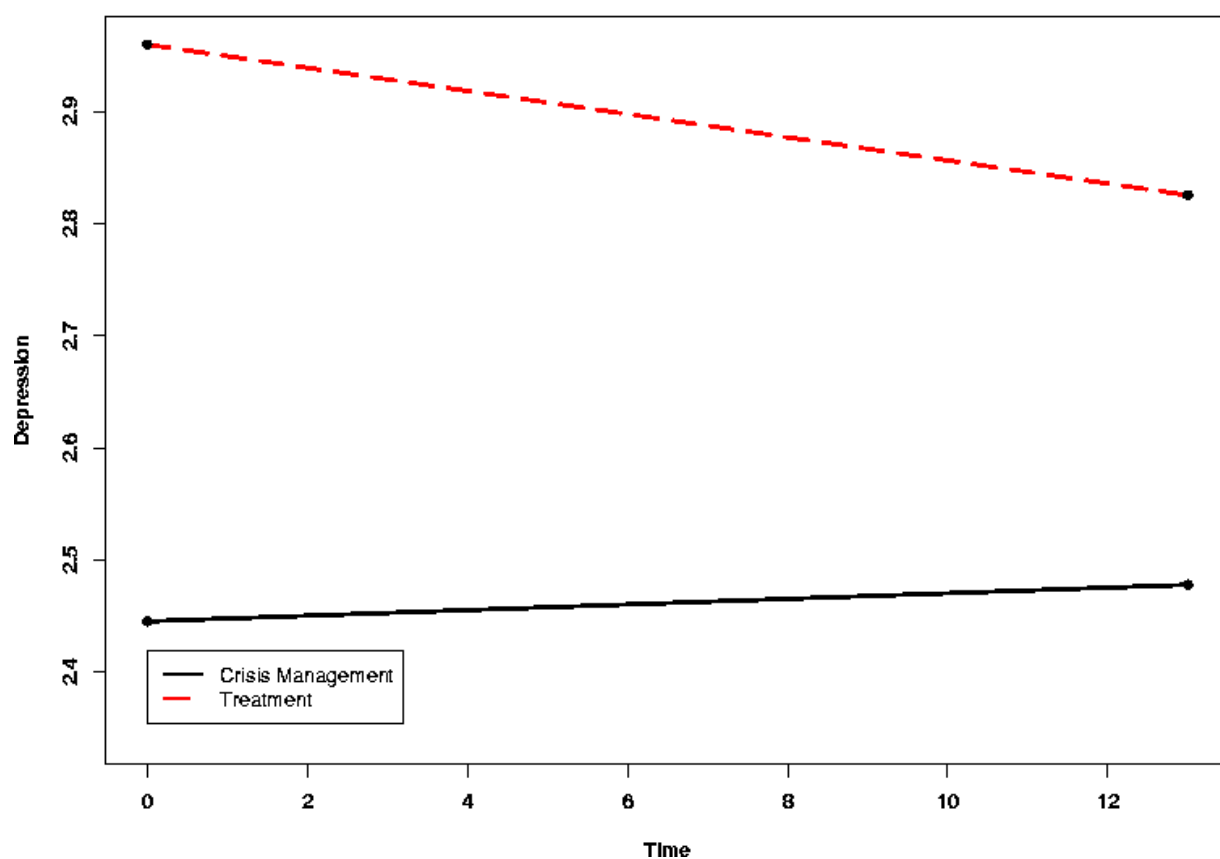(Depressive Symptoms at Low Appropriate Self–Sacrifice)

Figure 8: Three–Way Interaction Between Time, Treatment, and Appropriate Self–Sacrifice
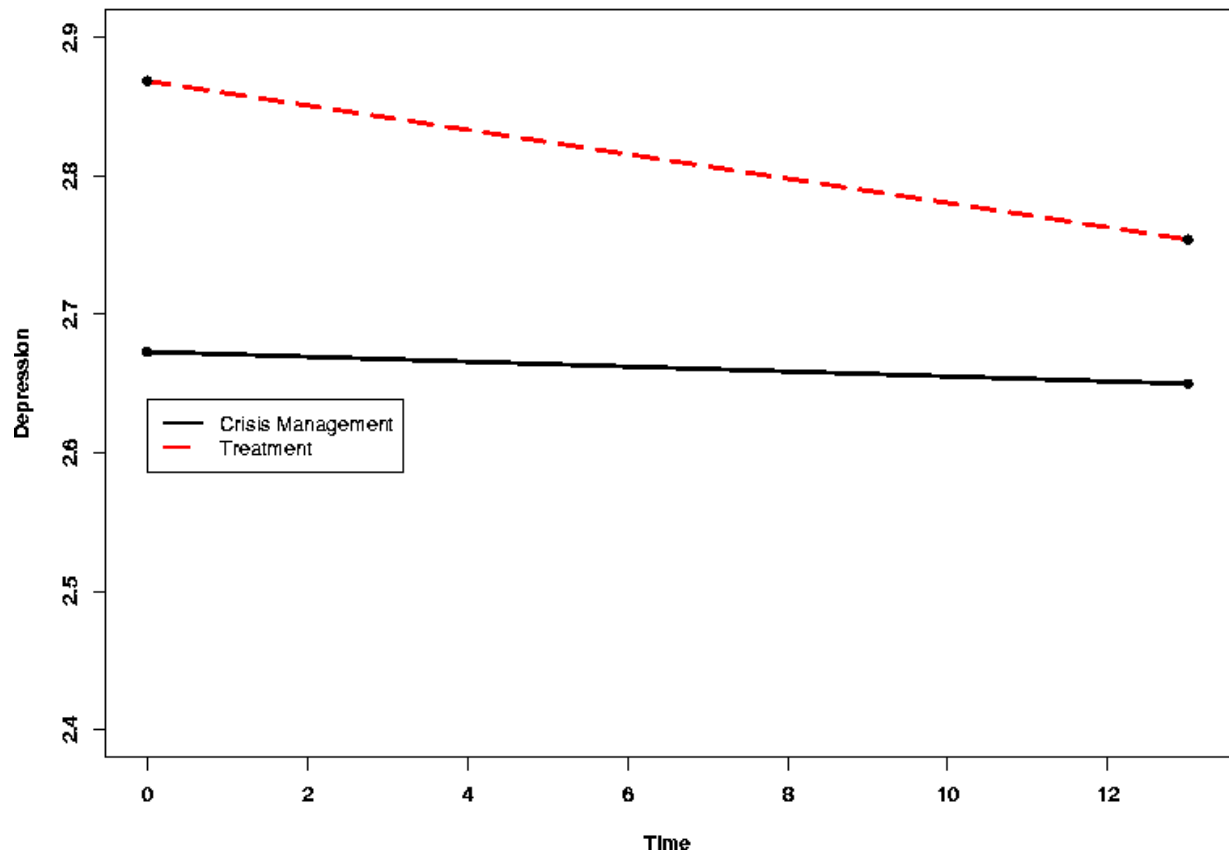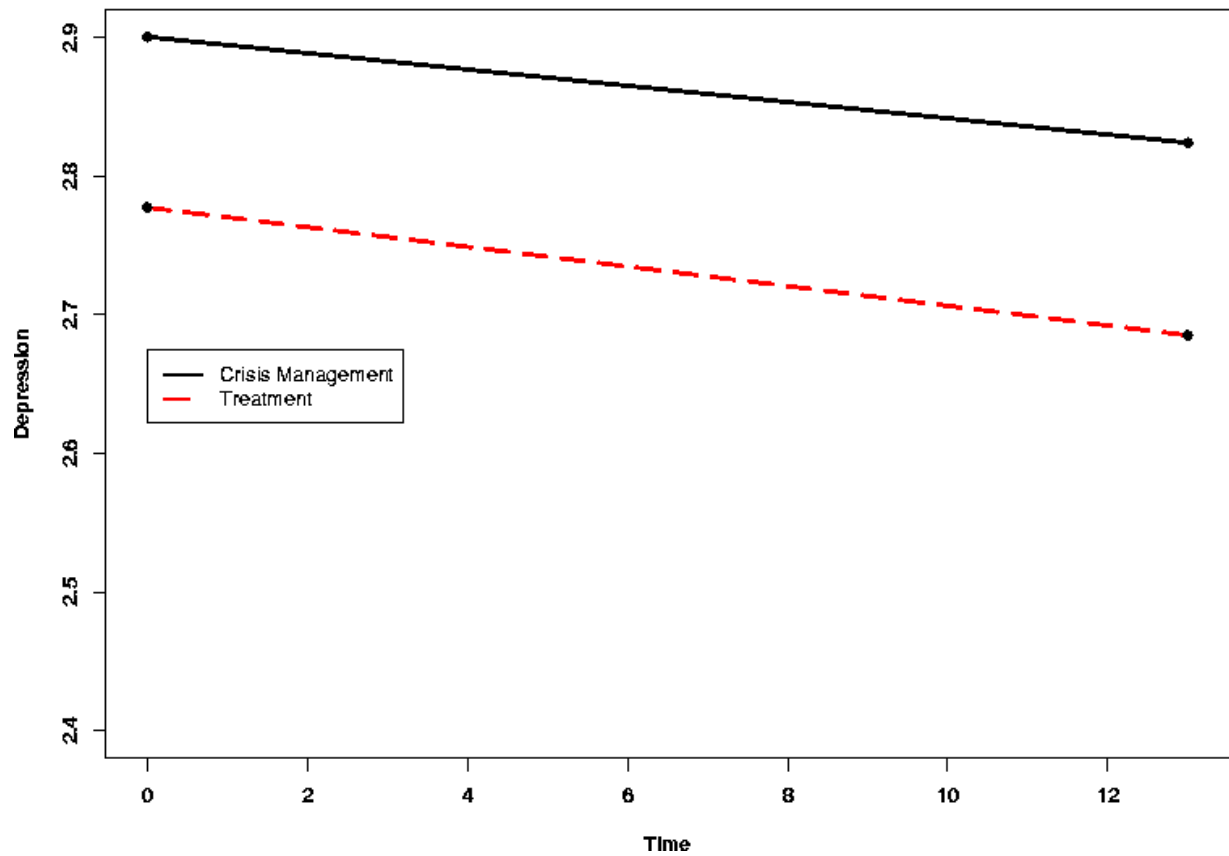(Depressive Symptoms at Mean of Appropriate Self–Sacrifice)

Figure 9: Three-Way Interaction Between Time, Treatment, and Appropriate Self-Sacrifice
(Depressive Symptoms at High Appropriate Self-Sacrifice)

79

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