After the End: Linguistic Predictors of Psychological Distress

Four Years after Marital Separation

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Abstract

Divorce is a stressful life event that is associated with increased risk for poor mental and physical health. A key goal for research in this area is to understand individual differences in who fares well or poorly over time, and whether behavioral markers of risk immediately after a separation predict longer-term adjustment. This paper investigates psychological distress in a sample of separated adults ($N = 134$, 84 of whom completed all follow-up assessments) who participated in an initial study and a follow-up assessment approximately 4.5 years later. Using multiple regression we examined whether two linguistic behaviors—the use of words from categories such as first-person pronouns and present tense words (verbal immediacy), and first-person plural pronouns (we-talk; e.g., “we” or “our”)—predicted self-reported psychological distress at follow-up. Increased use of first-person plural pronouns predicted greater psychological distress 4.5 years after marital separation. Additional analyses revealed that this effect was driven largely by differences in self-concept disturbance over time. The extent to which people use first-person plural pronouns following marital separation predicts increased risk for psychological distress years later, and this behavioral indicator may identify people who are at greater risk for poor adjustment over time.

Keywords: Divorce, marital separation, language use, attachment, verbal immediacy, we-talk, psychological distress, romantic relationships, marriage

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Divorce is a stressful life event that is linked to changes in economic and living conditions (Wang & Amato, 2000), susceptibility to illness (Floud et al., 2014), and broad-based morbidity and mortality (Sbarra, Law, & Portley, 2011; Shor, Roelfs, Bugyi, & Schwartz, 2012). Divorce is also associated with a range of psychological problems including loneliness (van Tilburg, Aartsen, & Pas, 2014), and decreases in happiness and life satisfaction (Gustavson, Røysamb, von Soest, Helland, & Mathiesen, 2012). Despite the abundance of research describing the outcomes of marital separation and divorce, we know relatively less about what predicts these outcomes over the long-term (Sbarra, Hasselmo, & Bourassa, 2015). The majority of work examining marital separation has focused on short-term psychological recovery (Bourassa, Manvelian, Boals, Mehl, & Sbarra, 2017; Sbarra, 2006; for an exception, see Lucas, 2005 and Gustavson et al., 2012), and the work in this area will benefit from studying the variables and processes that may predict distress beyond the initial months following marital separation. Drawing on attachment theory (Bowlby, 1980; Mikulincer & Shaver, 2007), the current study examined individual differences in the language adults used to describe their separation experience, whether these differences predicted subjective reports of psychological distress over four years later, and whether these linguistic differences were related to self-reported attachment anxiety and avoidance. Beyond self-report alone, emerging evidence suggests language use can serve as an important behavioral marker of attachment-related emotion regulation (cf. Lee, Sbarra, Mason, & Law, 2011), and in this way the study of language use may provide a unique perspective on understanding risk of poor outcomes following separation or divorce.

Attachment and Emotion Regulation

Attachment theory (Bowlby, 1980; Mikulincer & Shaver, 2007) provides a robust framework for understanding individual differences in the emotion regulatory strategies that people use to cope with real or perceived relationship threats (Sbarra & Borelli, 2018). These strategies can be understood in terms of two psychometrically reliable axes: attachment anxiety and attachment avoidance (Bartholomew & Horowitz, 1991; Fraley, Waller, & Brennan, 2000). These dimensions are believed to represent trait-like characteristics that organize how people think, feel, and behave in relational contexts (Gillath, Karantzas, & Fraley, 2016; Simpson & Rholes, 2017), including following romantic separation (Davis, Shaver, & Vernon, 2003). When the attachment system is activated under conditions of threat to adults' felt security (see Ryan, Brown, & Cresswell, 2007), the trait-like tendencies toward anxiety and/or avoidance give rise to a characteristic set of state-like emotion regulatory behaviors (Gillath et al., 2016). In the wake of a romantic separation—and, for that matter, following many other stressful life events—these individual differences in emotion regulatory strategies can promote or hinder adaptation over time.

Following romantic separations, people high in attachment avoidance often use *deactivating strategies*—behaviors designed to create emotional distance from a partner (Davis et al., 2003)—to minimize threats to their felt security. These deactivating strategies operate largely through emotion regulatory suppression (Birnbaum, Orr, Mikulincer, & Florian, 1997; Shaver & Mikulincer, 2007). From this perspective, the active suppression of emotional distress may signal an unwillingness to engage with a separation event in the short-term, and this emotional suppression can tax regulatory systems (Gross & John, 2003) and may predict an inability to adaptively respond to a range of stressors in the long term (Ayduk & Kross, 2009).

People high in attachment anxiety, in comparison, tend to engage in *hyperactivating* emotion regulatory strategies—efforts to maintain and/or regain a sense of felt security by re-

engaging with their former partner or relationship (Mikulincer & Shaver, 2007)—under conditions of real or perceived attachment threat. In response to a breakup, these behaviors often focus on reconnecting to a former partner and can intensify and sustain emotional distress (Davis et al., 2003). Compared to avoidance, attachment anxiety and hyperactivating emotion regulatory strategies are more closely linked to separation-related outcomes (Birnbaum et al., 1997; Davis et al., 2003), at least in the extant literature (Sbarra & Borelli, 2018). People high in attachment anxiety show stronger preoccupation with and more perseverative thoughts about their former partner following a non-marital breakup (Davis et al., 2003), and among people low in attachment security, non-acceptance of the end of the relationship maintains emotional distress over time (Sbarra, 2006). In its extreme form, this preoccupation can include excessive, obsessive, and confused behavior towards particular relationships or experiences (Hesse, 1999). Given that the association between anxiety and separation-related outcomes is more firmly established in this literature, we focused primarily on attachment anxiety while also including avoidance as a covariate in all of the prospective analyses.

Assessing Psychological Adjustment and Attachment-related Emotion Regulation

A key challenge for studying the association between individual differences in attachment styles and psychological adjustment to divorce is determining how to best operationalize the constructs of interest. In the case of adjustment to divorce, there are a variety of possible measures that might be used to assess psychological distress. Depressive symptoms, longing for an ex, self-concept disturbance, and life satisfaction are only a few examples of potential outcomes that might be assessed. Although confirmatory factor analyses have not yet been conducted for scale development, Bourassa and colleagues (2017) found that these four measures of psychological distress after marital separation were highly correlated and likely reflected an overall pattern of

adjustment following the end of a marriage. Using a composite of the available measures of wellbeing, rather than picking specific measures (or worse, selecting those that produce impressive results), can help account for the high level of correlation among the various measures of distress and provide a broad assessment of how people recover when their marriages end.

Individual differences in attachment style are traditionally assessed using self-report measures, such as the Experiences in Close Relationships – Revised Scale (Fraley, Waller, & Brennan, 2000). Although there is a robust literature using self-report measures to predict wellbeing, including after romantic separation (Davis et al., 2003), there are important concerns with this methodology. It is well known that single method approaches to operationalizing related predictor and outcome constructs are fraught with problems (cf. Campbell & Fiske, 1959). In the study of divorce, for example, if we seek to understand how self-reported attachment anxiety might predict self-reported psychological distress, it is difficult to separate the true association between the constructs independent of the shared method variance. Based on the assessment type alone we would expect that people who report they are high in attachment anxiety would also self-report that they are adjusting poorly after a divorce. Furthermore, the attachment-related emotion regulatory strategies associated with attachment style would suggest impact on behavior. For example, people high in attachment anxiety are more likely to engage in hyperactivating behaviors (Lee et al., 2011). One approach that would address both the action-oriented aspect of emotion regulation strategies while also decreasing shared method variance is to identify behavioral manifestations of emotion regulatory dynamics.

Linguistic Behavior and Emotion Regulatory Hyperactivation

One way to assess attachment beyond self-report is linguistic behavior (Borelli, Sbarra, Mehl, & David, 2011; Lee et al., 2011). Language use is increasingly employed as a behavioral

index of emotion regulation (Tausczik & Pennebaker, 2010), a marker of psychological adjustment (Cohn, Mehl, & Pennebaker, 2004), and individual differences in personality (Pennebaker & King, 1999). A prior series of papers studied language use as one behavioral manifestation of attachment anxiety. Borelli and colleagues (2011) found that children 8 to 12 years old who were judged to be anxiously attached to their primary caregivers evidenced greater verbal immediacy—language that is self-focused, present-oriented, and highly experiential—when describing their experiences with their caregivers. Verbal immediacy also is associated with adjustment to divorce (Borelli & Sbarra, 2011); following a romantic separation, adults who report a high degree of attachment anxiety and talk about their separation experience in an immediate way have greater blood pressure reactivity when discussing their separation (Lee et al., 2011). This study also showed that verbal immediacy is correlated with self-reported anxious attachment cross-sectionally, supporting the argument that the personally-involved, experiential nature of immediate language may represent a behavioral manifestation of attachment anxiety.

In addition to the verbal immediacy composite, we-talk—the use of first-person plural pronouns—may reflect the degree to which someone remains attached to their former partner and/or enmeshed in their past relationship. A critical component of normative adaptation to romantic separation involves reorganizing one's mental model of a relationship and moving from a state of psychological interdependence to one that is defined by self-regulated wellbeing (see Sbarra & Hazan, 2008). First-person plural words (i.e., we, us, our) predict a variety of positive outcomes for *intact* couples. We-talk predicts effective problem solving (Seider, Hirschberger, Nelson, & Levenson, 2009) and positive health outcomes when one partner is recovering from heart failure (Rohrbaugh, Mehl, Shoham, Reilly, & Ewy, 2008). When relationships end, however, we-talk may index an inability to separate oneself from the previous relationship. Following a

breakup, for example, self-concept disturbances—or a lack of clarity in one’s personal identity in the absence of their former partner—are associated with more we-talk when people reflected on their separation experiences (Larson & Sbarra, 2015). We-talk may be used to assess attachment anxiety manifest as an inability to create a stable sense of self independent from the former relationship, similar to verbal immediacy.

Given these findings, our study includes both verbal immediacy and first-person plural word use (i.e., we-talk) as potential linguistic indicators of emotion regulatory hyperactivation. A key question for the current study is whether verbal immediacy or we-talk might index behaviors associated with anxious attachment, as well as if this language use might predict long-term adjustment to separation and divorce. Importantly, this will allow us to determine whether we-talk or immediacy might predict psychological adjustment above and beyond self-reported attachment style. Using behavioral assessments of attachment-related emotion regulation in combination with self-reported measures of attachment provides a novel means for assessing the behavioral manifestations of attachment and is critical to reducing shared method variance when assessing the association between attachment styles and self-reported outcomes following the end of marriage.

The Present Study

The primary goal of this report was to study the association between linguistic behavior following marital separation and psychological distress approximately 4.5 years after the separation. We also aimed to extend previous findings using this sample—specifically, a cross-sectional association between verbal immediacy and self-reported attachment anxiety (Lee et al., 2011)—by investigating whether we-talk is associated with anxiety. The prior study using this data did not include a longitudinal assessment, and the long-term follow-up of this sample is a novel extension of the prior work. To achieve these aims, we used data from a long-term follow-up study

(average 4.54 years, $SD = 0.84$ years following marital separation) of adults who were originally assessed on three occasions across 7.5 months following a marital separation ($N = 134$, 84 total completers; see Bourassa, Hasselmo, & Sbarra, 2016).

Given the established cross-sectional association between verbal immediacy and attachment anxiety (Lee et al., 2011), we first hypothesized that we-talk would also be cross-sectionally associated with self-reported attachment anxiety at the study's start (Hypothesis 1). Second, we hypothesized that greater verbal immediacy and we-talk at the initial study visit would predict greater psychological distress at the follow-up, approximately 4.5 years later (Hypothesis 2). In accordance with recent publication guidelines in psychological science (Kazak, 2018), following the main test of our hypotheses, we conducted a series of exploratory analyses to contextualize the main results. Because we were unclear what specific aspects of self-reported psychological distress might be related to immediacy or we-talk, we examined how these measures of language use were associated with each of our four measures of distress: depressive symptoms, separation-related distress, longing, and self-concept disturbance (Research Question 1). The basic time course of our analyses needed further exploration as well, and we examined the association of verbal immediacy and we-talk with our psychological distress composite at the three initial study occasions (Research Question 2). Finally, we examined whether immediacy and we-talk, when averaged across the three initial study visits, predicted psychological distress at the follow-up (Research Question 3).

Method

Participants

Participants in the original study cohort were 134 recently separated adults ($n = 49$ men, mean age = 40.65, $SD = 9.76$) who reported recently experiencing a marital separation (mean

months since separation = 3.9, $SD = 2.4$). Participants reported relationship lengths with their former partners of 12.4 years ($SD = 8.3$) on average. Seventy-eight percent of the sample reported they were Caucasian, 14% reported they were Hispanic, 1.5% reported they were Asian, 1.5% reported they were African American, 0.8% were Native American, and 4.5% responded with “Other.” Approximately 52.2% of the sample reported making less than \$30,000 a year. Table 1 provides additional demographic information on the sample. Of the original 134 participants in the original study cohort, 90 completed both the first and second assessments (3 months later), whereas 79 (72.5%) completed all three initial assessments. All participants were then contacted to complete a follow-up assessment approximately 4.5 years after their separation, of whom 84 (63%, 27 = men, 56 = women) completed the final measurement. It is important to note that although only 84 participants completed the study, we used an intent-to-treat method to analyze our results, and report results from the full sample of 134 participants with any study data as a result. There were no significant differences between people who did and did not complete the follow-up assessment in terms of their age (Cohen’s $d = -0.24$), sex ($d = 0.24$), race ($d = -0.19$), time since separation ($d = 0.06$), verbal immediacy ($d = 0.22$), or we-talk ($d = -0.08$) at the initial assessment, or psychological distress at the initial assessment ($d = -0.23$), or any of the individual scales making up the psychological distress composite ($-0.33 < ds < -0.13$).

Procedure

Adults who experienced a recent marital separation were recruited from newspaper and listserv advertisements, as well as from a local “divorce recovery” support group in a metro area located in the Southwestern United States. Adults were recruited and screened to include people who were generally healthy, did not have a history of a psychotic disorder, and were not pregnant. Pregnancy and health history were exclusionary criteria, as the original study was part of a larger

study that included psychophysiological assessment for which health history and pregnancy are typically used as exclusionary criteria. During the original recruitment, one person was ineligible due to pregnancy, four people were ineligible due to being overweight, and four were ineligible due to use of high blood pressure medication (see Sbarra et al., 2015 for full CONSORT diagram for the data). Participants were informed the study's purpose was to understand "how adults adjust to marital separation and the ways in which your body responds when you think about and reflect on your separation experience." Participants were mailed a questionnaire packet prior to their first laboratory visit which included all self-report measures. After research assistants reviewed the self-report assessments, participants completed a separation recall visualization followed by a stream of consciousness (SOC) task. During the separation recall, participants were asked by a research assistant to create a detailed image of their former partner's face or of the two of them doing something together in their heads for 30 seconds. They were then provided a digital recorder and instructed to speak continuously for four minutes about their partner and/or separation experience in a stream of consciousness manner. This set of measures was then repeated at the second and third assessment 3 months and 6 or 9 months later respectively, as well as at the follow-up assessment approximately 4.5 years after their separation.

Measures

Demographics. Participants reported demographic information, including age and sex. Sex was treated as a dichotomous variable. In addition, they reported on the length of the prior relationship and their time since separation. The length of time from their separation to their completion of the follow-up assessment was calculated using the dates of participants' original and follow-up assessments.

Psychological Distress. Psychological distress was assessed using an average of four measures that reliably assess different components of psychological distress following divorce. This composite has been used in previous analyses using data from this research (Bourassa et al., 2017; Sbarra et al., 2013). The composite of the four measures' standardized scores evidenced strong internal reliability at the initial ($\alpha = .85$) and follow-up ($\alpha = .75$) assessments.

Non-acceptance of the divorce. An 11-item modified version of the Acceptance of Marital Termination scale (AMT; Kitson, 1982) assessed the degree of non-acceptance of the divorce from the former romantic partner and acceptance of the loss of said partner. Each item was assessed using a Likert-scale ranging from 1 (*not at all my feelings*) to 4 (*very much my feelings*). Example items include "I find myself thinking a lot about my former spouse," and "sometimes I just can't believe that we separated/divorced" ($\alpha = .88$).

Beck Depression Inventory. The Beck Depression Inventory II (BDI II; Beck, Steer, & Brown, 1988) assessed participants' self-reported psychological and somatic symptoms of major depressive episodes. Participants respond to items such as "I am so sad or unhappy that I can't stand it" and "I feel guilty all the time." Higher scores on this inventory reflected endorsement of more depressive symptoms and emotional disturbance. The internal consistency of the BDI in this sample was high ($\alpha = .87$).

Impact of Event Scale – Revised. The IES-R (Weiss, 2007) assessed the degree to which people experienced ongoing emotional intrusion and somatic hyperarousal related to a specific stressful event. Participants respond to items such as such as "I felt irritable and angry" or "pictures about it popped into my mind." The scale has 22 questions using a five point Likert-scale rating system ranging from 0 (*not at all*) to 4 (*extremely*). The total IES-R demonstrated high internal consistency ($\alpha = .93$).

Self-concept disturbance. Self-concept disturbance was measured by the Loss of Self and Rediscovery of Self Scale (LOSROS; Lewandowski & Bizzoco, 2007), which assessed the degree to which participants report losing their sense of self and rediscovering their sense of self after a romantic breakup. The LOSROS is a composite that includes both the Loss of Self scale and the Rediscovery of Self scale and combines the two 6-item scales into a 12-item questionnaire. Items are assessed on a 7-point Likert-scale ranging from 1 (*not at all*) to 7 (*a great deal*). Items capturing the loss of self include statements like, “I have lost my sense of self” and “I do not feel like myself anymore.” Items capturing the rediscovering of self include, “I have regained my identity,” and “I have become reacquainted with the person I was before the relationship.” Scores on the rediscovery of self subscale were reversed scored and participants’ scores on all items were averaged, with higher scores representing greater loss of self. The internal consistency of the LOSROS scale in the present sample was strong ($\alpha = .93$).

Self-reported attachment style. Attachment style was assessed using the Experiences in Close Relationships – Revised scale (ECR-R; Fraley et al., 2000), a 36-item questionnaire evaluating attachment-related insecurity in close relationships. It contains two subscales tapping attachment avoidance (e.g., “I find it difficult to allow myself to depend on others” and “I am nervous when partners get too close to me”) and attachment anxiety (e.g., “I get frustrated if romantic partners are not available when I need them” and “I worry that romantic partners won’t care about me as much as I care about them”). Respondents rate themselves on a Likert-scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). ($\alpha = .94$).

Linguistic behaviors. Research assistants transcribed the verbal SOC recordings. The Linguistic Inquiry Word Count (LIWC: Pennebaker, Francis, & Booth, 2001) is a computer

program that analyzes a transcribed document and compares it to an internal dictionary, assigning each word to particular linguistic categories (e.g., psychological and grammatical) resulting in a report of the percentage of total words in each category. The present analysis specifically looked at verbal immediacy and we-talk. LIWC is a valid and reliable measure of language use via text (Tausczik & Pennebaker, 2010).

Immediacy. Verbal immediacy is a factor-analytically derived composite of standardized language categories (see Pennebaker & King, 1999). Functionally, these categories include first-person singular pronouns (e.g., I, me, my), discrepancy words (e.g., should, would), and present tense verbs. Inverse scores are given for articles (e.g., a, the), and words of more than six letters. Conceptually, verbal immediacy represents an immersed, over-involved way of thinking about or recalling prior events. For people high in verbal immediacy, their speech is highly experiential and characterized by an enmeshment with their emotional experience. Verbal immediacy has been used in a variety of studies to assess psychological enmeshment when reflecting on experiences (Borelli & Sbarra, 2011; Kross & Ayduk, 2008; Lee et al., 2011). In the present study, higher scores on this linear scale were used as an index of individuals' experiential overinvolvement when discussing their breakup experience.

We-talk. We-talk is a single category of the LIWC language library, capturing the proportion of first-person plural words ("we," "us," and "our") used in the SOC task. In the present study, we-talk was employed as a verbal index of the extent to which a person remains attached to their former partner. Among intact couples, we-talk is considered a marker of communal orientation and associated with relational commitment and a shared identity (Rohrbaugh et al., 2008; Tausczik & Pennebaker, 2010). In the current study, higher scores on this scale were used as

a marker of relational overinvolvement, reflective of a putative inability of a person to separate themselves from their prior relationship.

Data Analysis

In the current study, we used multiple regression in a structural equation modeling framework to test whether verbal immediacy and we-talk following marital separation, at the initial study visit, predicted psychological distress 4.5 years later after accounting for participants' initial scores on the distress composite. We then tested additional models to account for a variety of potential alternative explanations for the results presented in our main model. For example, we also ran our models with alternative predictors as control variables including self-reported attachment, demographics, and relationship characteristics. Including self-reported anxious and avoidant attachment as covariates in particular also allowed us to assess the correlations among our linguistic variables and self-reported attachment. These variables were selected *a priori* as covariates that could be conceptually related to our predictor and outcome variables, and we ran all models with and without these covariates to ensure they did not explain our main associations of interest. We also ran all models with additional covariates—the presence of children and relationship status at the follow-up. The addition of these variables did not change the substantive results of any of our models and were not included in the final reported model results. We then deconstructed the psychological distress composite to evaluate whether any of the individual self-report measures might be driving the overall effect to answer Research Question 1. We then examined the primary associations of interest from our main model using varying time points within the original study to determine the stability of our primary results to assess Research Questions 2 and 3.

We used standardized regression weights for interpretation, which represent the amount of standard deviation (*SD*) unit change in the outcome variables predicted by a 1 *SD* change in the predictor. The standardized values are calculated using the formula $\beta = B \cdot SD(x) / SD(y)$ for continuous predictors, and $\beta = B / SD(y)$ for dichotomous variables, and are produced for both direct and indirect effects (Muthén & Muthén, 1998-2011). To account for missingness, we used full likelihood maximum likelihood (FIML) estimation. FIML uses all available information from participants, conceptually similar to best practices used to address attrition in randomized clinical trials (Gupta, 2011), but adapted for use in our current longitudinal, observational study. Under conditions when data is missing at random, FIML produces unbiased estimates that outperform other missing data treatments, such as listwise deletion and similar response pattern imputation (Enders & Bandalos, 2001; Graham, 2009). FIML also uses all participants with any available data. As a result, the final sample for all models is 134 participants, rather than the 84 participants who completed the follow-up.

Results

Table 2 displays descriptive statistics and provides a correlation matrix of all primary variables included in the study. We first examined the covariances among the linguistic variables and self-reported attachment style in our primary model to test Hypothesis 1. As reported elsewhere using these data (tested in a slightly different model; Lee et al., 2011), immediacy was associated with self-reported attachment anxiety at the study's start, $r = 0.28, p < .001$. Contrary to Hypothesis 1, however, we-talk was not associated with self-reported attachment anxiety, $r = -0.03, p = .725$. In addition, neither immediacy, $r = 0.08, p = .358$, nor we-talk, $r = -0.08, p = .38$, were associated with attachment avoidance. Finally, we observed a small to moderately sized

negative correlation between we-talk and verbal immediacy, $r = -0.25$, $p = .002$, which was in the opposite direction of our predictions.

We next predicted that higher levels of verbal immediacy and greater we-talk at the initial study assessment would predict greater psychological distress at the long term follow-up 4.5 years later (Hypothesis 2). As predicted, both higher Time 1 (T1, i.e., the initial assessment) verbal immediacy, $\beta = 0.26$, 95% CI [0.05, 0.47], $p = .011$, and we-talk, $\beta = 0.22$, 95% CI [0.02, 0.43], $p = .031$, were associated with greater psychological distress 4.5 years later. We-talk remained significantly associated with distress at the final assessment, $\beta = 0.19$, 95% CI [0.01, 0.38], $p = .038$, when including psychological distress at the initial assessment. However, when including initial psychological distress, verbal immediacy no longer predicted distress at the final assessment, $\beta = 0.11$, 95% CI [-0.12, 0.34], $p = .321$. We-talk explained 3.7% of additional variance when added stepwise into the regression, and remained associated with later distress when including self-reported attachment anxiety and avoidance, demographic, and relationship variables. Also of note, a covariate use in the study, self-reported attachment avoidance, unexpectedly predicted increased psychological distress at the study follow-up, $\beta = 0.29$, 95% CI [0.09, 0.49], $p = .005$, whereas attachment anxiety did not. The full results of these models are presented in Table 3.

Exploratory Analyses

We next conducted three sets of post-hoc analyses to explore the findings in greater detail, as outlined in Research Questions 1-3, to better contextualize our main results¹. Specifically, we first examined each of the separate self-report variables in independent models to evaluate which

¹ We ran all additional models both with and without our covariates of interest. All substantive results remained essentially unchanged when including the covariates, including the presence of children and relationship status at the follow-up.

specific measures might have accounted for more or less of the association between language use and distress (Research Question 1). We then examined the association of we-talk and verbal immediacy with distress measured at earlier study visits (Research Question 2), as well as we-talk and verbal immediacy averaged over the course of the original three study visits with later distress at the follow up to explore the stability of our primary study results over time (Research Question 3).

To explore Research Question 1, we first separated the psychological distress composite into its separate measures to test the associations between we-talk and verbal immediacy with each variable independently. This resulted in four independent models in which the psychological measure at follow-up was regressed on that same single psychological measure, verbal immediacy, and we-talk at T1. Neither we-talk nor verbal immediacy predicted IES-R scores at follow-up, $\beta = 0.01$, 95% CI [-0.19, 0.31], $p = .892$; $\beta = -0.03$, 95% CI [-0.25, 0.19], $p = .786$. Similarly, neither we-talk nor verbal immediacy predicted BDI-II scores, $\beta = 0.12$, 95% CI [-0.08, 0.32], $p = .233$; $\beta = 0.14$, 95% CI [-0.07, 0.35], $p = .196$, or AMT scores at follow-up, $\beta = 0.09$, 95% CI [-0.10, 0.27], $p = .352$; $\beta = 0.09$, 95% CI [-0.12, 0.29], $p = .373$, though the small, non-significant effects were in the direction of the effect observed in the overall composite. In the case of self-concept disturbance, however, greater we-talk at T1 predicted greater self-concept disturbance at the follow-up, $\beta = 0.35$, 95% CI [0.18, 0.52], $p < .001$. However, verbal immediacy at T1 was not associated with self-concept disturbance at the follow-up, $\beta = 0.09$, 95% CI [-0.10, 0.27], $p = .367$. The results suggest that the higher relative psychological distress associated with greater we-talk after marital separation was primarily due to the association between we-talk and self-concept disturbance, with smaller, non-significant associations on the emotional impact of the event, depressive symptoms, and longing for an ex-partner.

To explore Research Question 2, we examined the associations among we-talk and verbal immediacy with psychological distress at each of the assessments included in the original study (the initial visit, 3-month visit, and the 6/9 month visit). Verbal immediacy predicted psychological distress at the initial visit, $\beta = 0.34$, 95% CI [0.18, 0.50], $p < .001$, but did not predict at the 3 month visit, $\beta = 0.11$, 95% CI [-0.06, 0.28], $p = .203$, or the 6/9 month visit, $\beta = 0.04$, 95% CI [-0.13, 0.21], $p = .636$. We-talk did not predict psychological distress at the initial visit, $\beta = 0.03$, 95% CI [-0.14, 0.20], $p = .701$, 3 month visit, $\beta = -0.05$, 95% CI [-0.20, 0.15], $p = .487$, or 6-9 month visit, $\beta = 0.02$, 95% CI [-0.15, 0.20], $p = .789$, suggesting that the association between we-talk and distress only emerges over the long-term.

Finally, to explore Research Question 3, we examined the association between we-talk and verbal immediacy with psychological distress when averaging language use variables over the course of all three study assessments (initial visit, 3 month visit, and 6/9 month visit, all prior to the long-term follow-up). When averaged across the three study visits, the mean level of verbal immediacy did not predict psychological distress, $\beta = 0.11$, 95% CI [-0.10, 0.32], $p = .285$. In contrast, greater mean level we-talk predicted greater psychological distress at follow-up, $\beta = 0.24$, 95% CI [0.07, 0.41], $p = .008$. This suggests that the association between mean level we-talk and later psychological distress is stable when assessing we-talk up to a year after the separation.

Discussion

The current study examined long-term psychological adjustment following marital dissolution in a sample of adults ($N = 134$, 84 completers). Greater use of we-talk at the initial study occasion was associated with greater ongoing psychological distress 4.5 years later. Specifically, after accounting for participants' initial self-report distress immediately after the separation at the initial study visit, self-reported attachment anxiety and avoidance, and several

demographic variables, we-talk explained an additional 3.7% of the variance in self-report distress at the follow-up. These results are particularly notable as there are relatively few long-term studies of adults' psychological adjustment, and several additional features of the current report are noteworthy.

First, we found mixed evidence for the association between our linguistic markers of interest and self-reported attachment anxiety (Hypothesis 1). A prior study using the same data reported here demonstrated that verbal immediacy and self-reported anxious attachment were significantly correlated at the study's initial visit (Lee et al., 2011), suggesting that immediacy may be a state-level index of attachment-related hyperactivation. In the current study, we sought to extend this earlier work and hypothesized that we-talk would also be associated with attachment anxiety as an additional linguistic marker indexing an inability to separate from a former relationship. We-talk and attachment anxiety were not, however, significantly correlated. More surprisingly, we-talk was inversely associated with verbal immediacy. In retrospect, this may not be surprising—the immediacy composite includes first-person singular pronouns while we-talk is comprised of first-person plural pronouns. Whereas increased use of first-person pronouns may capture self-focused attention (see Pennebaker, Mehl, & Niederhoffer, 2003), we-talk may reflect an inability to recreate an independent self-concept following the end of a relationship independent of attachment anxiety. A key goal of psychological recovery following divorce is the ability to develop an independent sense of self characterized by self-regulation when coregulation with a romantic partner is no longer possible (Sbarra & Hazan, 2008). From this perspective, increased we-talk could represent a focus on the lost relationship that translates to an inability to develop adaptive long-term self-regulatory strategies. We expected these characteristics to be associated with attachment anxiety, but it may be the case that maintaining an interdependent self-concept—

to the extent that we-talk assesses this construct—is a unique risk factor for psychological distress, distinct from attachment anxiety, when coping with marital dissolution.

Second, we found that verbal immediacy and we-talk predicted later psychological distress, but only we-talk predicted relative change in psychological distress when controlling for distress at the initial study visit (Hypothesis 2). We-talk was not associated with psychological distress over the course of the first three assessments of the study; however, we-talk predicted psychological distress at the long-term follow-up 4.5 years after the separation. The association between we-talk and later psychological distress was durable over time—we-talk averaged across the three study visits in the first year post-separation was predictive of later psychological distress. The association of we-talk as a linguistic behavior with later psychological distress is a notable contribution to research examining the correlates of long-term adjustment to marital separation and divorce. Although a handful of studies examine the trajectories and predictors of adjustment to divorce (Lucas, 2005; Lucas, Clark, Georgellis, & Diener, 2003), we are aware of no other work that focuses specifically on the observable behaviors that are linked to later distress. More importantly, this is the only study to our knowledge that examines predictors of long-term adjustment following marital dissolution without relying only on self-report. We-talk does not share method variance with self-reported psychological distress, which allows us to be more confident in our results.

Most research to date conceives of we-talk as a beneficial construct for ongoing relationships. Among intact couples, we-talk is believed to reflect greater interdependence or a more communal orientation toward the relationship (Rohrbaugh et al., 2008; Seider et al., 2009). The current study refines this picture by highlighting a point that is well known among language researchers (Pennebaker et al., 2003): when interpreting linguistic data, context is key. After a

separation, the context for we-talk has changed dramatically and the same psychological processes that gave rise to increased we-talk takes on a different meaning after the end of a relationship. Rather than expressing a strong connection to a spouse, we-talk after divorce instead could instead represent an inability for someone to move past the relationship that has ended.

We-talk following marital dissolution may also index difficulties with developing an independent sense of self after a relationship ends (Borelli, Sbarra, & Mehl, 2018), thus predicting the people who are at risk of becoming psychologically “stuck” on their relationships (Sbarra & Ferrer, 2006) by failing to gain the needed psychological distance to separate themselves from their previous relationships over the long-term. This possibility is supported by the additional exploratory analyses related to Research Question 1 deconstructing the psychological distress composite. We found that self-concept disturbance primarily accounted for the associations between we-talk and psychological distress, and the size of this effect was meaningful. A person who used approximately four to five more first-person plural pronouns a minute on average when reflecting on their separation would recover half as much as those with average levels of we-talk. The importance of self-concept disturbance in this sample is consistent with prior work that found that people who report more difficulty constructing a new self-concept following a non-marital romantic breakup also use more first-person plural pronouns (Larson & Sbarra, 2015).

One interesting but unanticipated finding in the present study was that attachment avoidance, and not anxiety, predicted long-term distress, even after controlling for participants’ relevant background demographics. This finding stands in contrast to other studies that find poorer outcomes are associated with attachment anxiety following separation (Davis et al., 2003; Lee et al., 2011; Sbarra, 2006) and with a psychologically overinvolved perspective more generally (Bourassa et al., 2017; Kross and Ayduk, 2011). One potential explanation is that the outcomes of

different attachment-related strategies differ over time. More specifically, hyperactivating strategies may result in short-term distress, whereas deactivating strategies, which function to suppress distress in the short-term (by allowing for the avoidance of painful thoughts and feelings associated with the separation event) may be associated with worse long-term outcomes. Emotion regulatory suppression is effortful and suppression techniques are generally not effective over the long-term (Gross & John, 2003). Hyperactivating strategies may intensify distress following marital separation by forcing people to experience their emotions and thoughts related to the end of the relationship, but it is possible these modes of emotional experience and expression are functional over the long-term by helping people confront their emotional distress when compared with avoidance. On this topic, our ideas are largely speculative and require further empirical study.

The findings from this study may have clinical implications for people following divorce, but this ultimately hinges on whether we-talk is a marker of risk or a causal element in maintaining long-term distress. The association between both we-talk (which might indicate an inability to accept the end of the relationship and reorganize one's self-concept) and self-reported attachment avoidance with later psychological distress may suggest that interventions designed to decrease maladaptive emotion regulatory strategies, such as Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999; Hayes et al., 2006), might benefit people following marital separation or divorce. For example, ACT could target cognitive fusion (which maps well onto hyperactivation) or experiential avoidance (which maps well onto deactivation) to reduce future psychological distress. Alternatively, we-talk could potentially be used to identify people who are at the greatest risk for poor long-term outcomes and ultimately direct clinical services (targeting a range of potentially causal agents of distress) to these people. Future research is needed to determine whether first-person plural language is a risk marker or causally contributes to

maintained distress; if the former, we-talk would be ideal for identifying people at risk for maintained distress, but if the latter, then we-talk can become a candidate target for future clinical interventions.

Ideally, knowledge about behavioral manifestations of traits that are associated with poorer wellbeing over the long term would allow clinicians to assess and target specific linguistic behaviors associated with people's psychological outcomes. For example, a clinician could assess we-talk as an additional index of a client's attachment to their former partner/relationship, beyond self-report, and use interventions designed to decrease we-talk and increase psychological distance related to the relationship that has ended. Furthermore, clinicians could have clients speak about their divorce event in a more distanced way (Kross & Ayduk, 2008) to promote reflection with the intention of reducing later psychological distress, similar to recent work by Moser and colleagues (2017). The present results are correlational, however, and as noted, interventions testing this possibility are required before these claims can be verified empirically.

These findings should be understood in the context of the study's limitations. First, of the 134 original participants, only 84 completed the follow-up assessment. Although we used the most current methods to account for missing data (Enders & Bandalos, 2001; Graham, 2008), it is possible that missingness biased the results. Second, the significant association of we-talk and psychological distress at the 4.5 year follow-up was in contrast to the nonsignificant association of we-talk and distress at the study's earlier assessments. Despite the use of different methods to account for shared method variance, it is possible that this association is due to chance. However, when averaged across the first three assessments of this study we-talk continued to predict distress at the follow-up, which diminishes the likelihood that this finding is a false positive. Finally, these results were not pre-registered at the study's start, and should be considered exploratory in nature.

Conclusion

Using a sample of recently separated adults, the current study explored the associations of attachment anxiety—indexed by the linguistic behaviors of verbal immediacy and we-talk—and psychological distress approximately 4.5 years after marital separation. Speaking in an immediate way and using higher levels of we-talk predicted relatively greater later psychological distress, but the effect for verbal immediacy was eliminated when accounting for prior psychological distress. Greater use of we-talk, however, predicted changes in psychological distress when controlling for participants' distress at the study's start, and may index an inability for recently divorced adults to disengage from their prior relationship. Importantly, these results did not rely on self-reported attachment exclusively, and, therefore, cannot be explained by shared method variance alone. These findings present possibilities for predicting long-term psychological distress using linguistic behavior, as well as possible targets for future clinical interventions or treatments for recently-separated and divorced adults.

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Table 1
Demographic Characteristics for Study Participants

Demographics	<i>N</i> = 134
% Women	63.2%
% Making Less Than \$30,000	52.2%
% Legally Divorced	21.3%
% With Biological Children	40.4%
% Caucasian	75.4%
% Some College Education	57.9%
Age	40.65 ± 9.76
Time Since Separation	3.97 ± 2.42
Length of Relationship	163.19 ± 100.37
Length of Marriage	148.86 ± 99.81

Note: Data are means ± standard deviations and sample percentages from all valid responses. All variables were measured at the initial study visit. Income is measured as the percentage of people reporting making less than \$30,000 gross income annually. Length of Relationship, Length of Marriage, and Time Since Separation are measured in months.

Table 2

Correlations and Descriptive Statistics for Primary Study Variables

	1	2	3	4	5	6	7	8	9	10
Verbal immediacy (1)	1.00									
We-talk (2)	-0.25*	1.00								
Psychological distress (3)	0.33*	-0.05	1.00							
Follow-up Psychological distress (4)	0.20*	0.15	0.48*	1.00						
Attachment anxiety (5)	0.28*	-0.03	0.54*	0.30*	1.00					
Attachment avoidance (6)	0.08	-0.08	0.02	0.19*	0.44*	1.00				
Age (7)	-0.10	-0.09	0.10	0.06	-0.03	0.10	1.00			
Sex (8)	-0.14	0.14	0.04	0.29	0.01	-0.13	-0.00	1.00		
Relationship length (9)	-0.03	-0.03	0.06	0.09	-0.03	0.10	0.62*	0.05	1.00	
Time since separation (10)	0.05	0.01	0.05	0.05	0.16	-0.05	-0.11	-0.10	-0.10	1.00
Mean	0.00	1.78	0.00	0.05	3.52	3.09	40.64	36.6%	13.59	4.60
<i>SD</i>	0.67	1.33	0.84	0.76	1.27	1.04	9.72	Men	8.33	1.01

All means and SDs were calculated using full information maximum likelihood estimation (FIML). All variables were measured at T1 unless noted. Time since separation at the follow-up and relationship lengths are listed in years.

* $p < .05$

Table 3

Regression Coefficients from Models Predicting Later Psychological Distress from Verbal Immediacy and We-talk

	β	95% CI	<i>B</i>	β	95% CI	<i>B</i>
Intercept	-0.22	[-0.53, 0.09]	-0.16	2.96	[-2.49, 0.53]	-0.75
Verbal immediacy	0.10	[-0.10, 0.30]	0.11	0.14	[-0.06, 0.33]	0.15
We-talk	0.19*	[0.01, 0.37]	0.11*	0.18*	[0.01, 0.35]	0.10*
Psychological distress		[0.28, 0.63]	0.41**	0.49**	[0.27, 0.70]	0.44**
Attachment anxiety				0.14	[-0.39, 0.13]	-0.08
Attachment avoidance				0.29**	[0.09, 0.49]	0.21**
Age				-0.01	[-0.25, 0.23]	-0.00
Sex				0.31**	[0.13, 0.49]	0.24**
Relationship length				0.04	[-0.21, 0.28]	0.00
Time since separation				0.09	[-0.13, 0.30]	0.01

Note: All variables are measured at T1 unless noted. 95% CI = 95% confidence interval. Time since separation was measured at the follow-up assessment.

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