Synchrony in Affect Among Stressed Adults: The Notre Dame Widowhood Study

Lindsay M. Pitzer1,2 and C. S. Bergeman1

1Department of Psychology, University of Notre Dame, Indiana.
2Western Psychiatric Institute and Clinic, University of Pittsburgh Medical Center, Pennsylvania.

Objectives. This study examined 3 types of synchrony (i.e., asynchrony, synchrony, and desynchrony) between positive and negative affect in a sample of adult widows and assessed whether individual differences in synchrony type predicted adjustment over time.

Methods. Participants included 34 widows from the Notre Dame Widowhood Study, who reported on their positive and negative affect across a 98-day period following conjugal loss and responded to follow-up questionnaires every 4 months for 1 year.

Results. Multilevel models revealed that although the nomothetic average of the synchrony scores indicated a negative or desynchronous relationship between positive and negative affect, an ideographic view identified evidence of individual differences. Furthermore, patterns of change in the relationship between positive and negative affect suggested that, over time, desynchrony in affect generally abates for widows but individual differences were predictive of adjustment over time. Furthermore, distinct trajectories that the women follow from the time of their husband’s death include patterns of resilience and delayed negative reaction, each of which predicted present levels of grief.

Discussion. Discussion focuses on (a) individual differences in the within-person structure in affect, (b) the dynamic processes involving negative and positive affect, and (c) the predictive power of synchrony scores.

Key Words: Affective synchrony—Positive and negative affect—Resilience—Stress.

Scholars have long recognized the importance of understanding adaptation to or recovery from stressful events—such as the loss of a spouse (Biocenti, Bergeman, & Boker, 2004, 2006; Bonanno et al., 2002; Hansson & Stroebe, 2007). With adaptation comes a “roller coaster” effect of emotions, with a marked fluctuation in mood during the days and weeks following the death (Blazer, 1990; Thomas, DiGiulio, & Sheehan, 1988). The ability to manage one’s emotions, however, has been viewed as an especially important component of well-being (Staudinger, Marsiske, & Baltes, 1993), and the ability to regain emotional control may be reflective of successful recovery across the course of bereavement (Kessler, Price, & Wortman, 1985; Stroebe, Hansson, Stroebe, & Schut, 2001). One vital aspect of the emotion regulation process is the pattern of synchrony between one’s positive and negative affect.

The model of affective synchrony (Rafaeli, Rogers, & Revelle, 2007) is one of a few perspectives designed to assess individual differences in the intra-individual structure of affect (Barrett, 1998; Coifman, Bonanno, & Rafaeli, 2007). Using this model, Rafaeli and colleagues (2007) describe three possible types of covariation between affective states: (a) desynchrony—an inverse association between positive and negative affect, (b) synchrony—a positive coupling between affect, and (c) asynchrony—independent activation of affect. This study replicates and extends the model of affective synchrony using a sample of widows to understand (a) whether there are individual differences in the covariation of affect over the first few months of bereavement (represented by patterns of asynchrony, synchrony, or desynchrony), (b) how this relationship changes as a function of time since conjugal loss, and (c) how synchrony scores over time inform resilience and adaptation to the loss.

The orthogonal relationship between positive and negative affect is described in several models of emotion (see Barrett & Russell, 1998 for a review of these models) including the Circumplex Model, which focuses on valence (pleasant vs. unpleasant affect) and the arousal or intensity of the affective states (Barrett & Russell, 1998); the Positive and Negative Activation Model (Watson, Wiese, Vaidya, & Tellegen, 1999); the Evaluative Space Model (Cacioppo & Berntson, 1994); the Energy and Tension model (Thayer, 1989); and the Dynamic Model of Affect (Zautra, Affleck, Tennen, Reich, & Davis, 2005). Each model generally posits that although experiencing low stress, positive and negative affect are largely unrelated—this would be similar to asynchrony (i.e., a null temporal relationship between positive and negative affect). Furthermore, several of the preceding models also illustrate that stressful conditions limit cognitive resources, reduce the space shared by positive and negative affect, and force a polarization of how...
affective states are experienced and interpreted (Barrett & Russell, 1998; Labouvie-Vief, Diehl, Jain, & Zhang, 2007; Zautra, Berkhof, & Nicolson, 2002). What is important in this instance is not that there is more or less negative affect but that the two affective states are less differentiated (i.e., things are either good or bad). This is not to say that stress changes the function of positive and negative emotion, but it does appear to change the subjective experience of affect (Coifman et al., 2007).

Furthermore, previous research on widows has underscored the emotional lability that follows conjugal loss (Blazer, 1990; Thomas et al., 1988). During the period of bereavement, widows have the opportunity to regain emotional control, which may enhance successful adjustment to their husband’s death (Kessler et al., 1985; Stroebel et al., 2001). Here, we may see, at least for some widows, that the experience of positive affect reverses the lingering effects of negative affect (undoing hypothesis; Frederickson, 2001; Fredrickson & Joiner, 2002). Positive affect may be effective for (a) regulating negative emotions by working to broaden a number of cognitive and physical attributes (e.g., attention and creativity in thoughts and ideas; Fredrickson & Levenson, 1998; Ong & Bergeman, 2010) and (b) through facilitating the ability to garner social support and helping build intellectual resources—all of which allow for improved understanding of complex situations (Fredrickson & Branigan, 2005; Keltner & Bonanno, 1997). For example, coping mechanisms and positive support have been found to lower negative affect for those with particularly stressful lives (Cohen, Burt, & Bjorck, 1987).

Adaptive functioning, therefore, appears to be contingent on a more sophisticated perception of affect (Ong & Bergeman, 2004). Emotional complexity reflects the capacity to distinguish between positive and negative emotions. This perspective further suggests that when an individual maintains differentiation between positive and negative affect—or pleasant and unpleasant emotional states—they generally experience more adaptive recoveries following a stressful experience (Epel, McEwen, & Ickovics, 1998; Ong & Bergeman, 2004). Therefore, we suggest that initial reactions to the loss will produce desynchrony in affect but that with time the experience of the death may become less stressful and synchrony type will shift from desynchrony toward asynchrony, with widows experiencing greater affective complexity.

Beyond a nomothetic approach to describing the effect of conjugal loss and the subsequent process of bereavement is the understanding of individual differences in these experiences. When considering an ideographic approach, models of resilience suggest that people experience traumatic situations very differently, that is, some struggle with adjusting to a major life event, whereas others acclimate relatively well (Bonanno & Kaltman, 1999, 2001; Wortman & Silver, 1989, 2001). Prior research on resilience and synchrony in affect suggest that resilient individuals better distinguish between pleasant and unpleasant emotional states—resulting in less desynchrony in affect (Coifman et al., 2007; Frederickson, 2001; Ong & Bergeman, 2004). Using a sample of middle-aged adults who recently experienced a loss, Coifman and colleagues (2007) found that the interaffect correlation was −.71, suggesting severe desynchrony. Interestingly, splitting the sample by trajectories of resilient versus symptomatic bereavement, and looking retrospectively at early adjustment, resulted in significant differences in interaffect correlations (−.43 vs. −.95, respectively), indicating that resilient adults expressed less desynchrony compared with adults who had more difficulty adapting to their loss. In this research, being more affectively complex buffered individuals from the detrimental effects of stressful life experiences. Thus, we expect that widows who are less desynchronous will display better adjustment to the death over time, than those widows who are more desynchronous.

In the area of bereavement, four patterns of adaptation, or lack thereof, are described—resilience, recovery, chronic grief, and delayed grief (Bonanno, 2004). Resilience has been characterized as effective adjustment despite the experience of difficult or demanding life events (Masten, Best, & Garmezy, 1990), equanimity in the face of stress (Montpetit, Bergeman, Deboeck, Tiberio & Boker, 2010), or the maintenance of typical functioning even when internal or external risk factors are present (Luthar, Cicchetti, & Becker, 2000; Rutter, 1987). In terms of positive and negative affect, resilience should encompass a pattern of covariation between positive and negative emotions that looks like low desynchrony to asynchrony, which is expected to remain constant, and/or improves over time but would never become more desynchronous). Recovery has been defined as a return to baseline levels of functioning (i.e., prebereavement levels), but the recovery pathway, in contrast to resilience, may include ongoing struggles with symptoms of grief or difficulty executing normal daily activities (Mancini & Bonanno, 2006). Here, we would expect to see covariation in affect that initially decreases—that is, becomes more desynchronous—but, over time begins to become less desynchronous, moving to a pattern of asynchrony. On the maladjustment side, chronic grief reflects an elevated disruption in functioning or an increase in emotional distress that does not dissipate, or decrease in severity, over time. Widows reflecting affective patterns of chronic grief should display high levels of desynchrony over time—this level of desynchrony does not improve (e.g., less desynchronous) over the course of time. Individuals exhibiting delayed grief, on the other hand, may show only a mild disturbance immediately following the loss, and may even appear resilient, but later display patterns of emotional dysregulation and lack of adjustment that resemble chronic grief (Bonanno, 2004). Here, we would expect that the covariation in affect would initially be positive—that is, on the low end of desynchrony to asynchrony—but that over
time, these widows would become more desynchronous. Although estimations of these patterns of adaptation have historically taken the long view, there is no reason to believe that adjustment in the weeks and months following conjugal loss would be different.

Therefore, we expect that the above types of adjustment over the first few months of widowhood will be reflected in different patterns of covariation of positive and negative affect among the individual widows over time. Furthermore, we expect that membership in these trajectory groups will differentially predict long-term outcomes for these widows. That is, those whose trajectories closely resemble resilience or recovery will experience more positive well-being outcomes over time, whereas those whose trajectories resemble chronic or delayed grief will experience more negative well-being outcomes.

This article examined synchrony in affect in a widowed sample to understand how affect covaries among a stressed sample and how individual differences in synchrony type may predict adjustment to the death. First, we expected that general reactions to conjugal loss would produce desynchrony/less differentiation in affect but that there would be individual differences in the type of synchrony present in the weeks following the death (Hypothesis 1). Second, time since the loss would result in greater emotional complexity (i.e., increases in time would bring decreases in stress and less desynchrony in affect. The affective systems redifferentiate and move back to an orthogonal nature), suggesting adaptation or emotional recovery from the stress associated with the loss (Hypothesis 2). Third, we expected that there would be individual differences in the covariation in affect. That is to say, some individuals would be better at differentiating their emotional states in general, as well as over time. Differences in covariation in affect would reflect varying responses to the death, such as resilience, recovery, delayed grief, or chronic grief (Hypothesis 3). Finally, because more emotional complexity (less desynchronous/more asynchronous) was related to resiliency from loss and being less emotionally complex (more desynchrony) was related to being more symptomatically bereaved, we expected that differences in overall trajectory type would be predictive of adjustment over time, as measured by level of grief resolution (Hypothesis 4).

**METHODS**

**Participants**

Participants included 34 widows from the Notre Dame Widowhood Study (NDWS)—a study designed to assess the effects of conjugal loss on the physical and mental health of older widows (see Bisconti et al., 2006 for a detailed description). In brief, the predominately white (97%) sample ranged in age from 61 to 83 ($M = 71.94$, $SD = 6.11$). About 17% of the widows had an annual income between $7,500 and $14,999, 47% reported income between $15,000 and $24,999, 13% between $25,000 and $40,000, and 23% reported making more than $40,000 per year. About 44% had a high school degree or less, whereas 56% obtained postsecondary education (i.e., vocational education, some college, college degree, postgraduate degree). The length of marriage ranged between 14 and 63 years ($M = 46.97$, $SD = 12.26$), and it was the first marriage for 79% of the widows. About 91% of the women lived alone.

**Procedures**

We focused on the daily diary questionnaires completed by each widow during the course of 98 days. Distributed in 14-day increments, the widows completed the surveys in the evening and returned them by mail every 2 weeks. On average, widows completed 78% of their daily questionnaires. Each of the 34 widows who participated in a daily diary portion of the study first received and completed a battery of self-report questionnaires approximately one month postloss ($M = 28$ days, $SD = 6$). Global measurement of the widows took place at 1, 4, 8, and 12 months postloss, making this study longitudinal at the daily level (98 days or approximately three months of daily measurement) and at the global level—four measurement time points for 1 year.

**Daily-Level Measures**

Positive and negative affect.—The 36-item Mental Health Inventory (Veit & Ware, 1983) is a widely used mental health measure sensitive to intra-individual change (for a review, see McHorney, Ware, Rogers, Raczek, & Lu, 1992). Participants indicated on a 4-point scale—$1 = not at all true$ to $4 = completely true$—the extent to which they experienced a range of daily positive emotions and daily depression/anxiety symptoms (negative emotions). Measurement of positive affect included an 11-item subscale (e.g., “Today, I felt cheerful; $\alpha = 0.95$ for Day 1). The negative affect subscale included the sum of eight items from the anxiety subscale and four items from the depression subscale (e.g., “Today, I was a very nervous person” and “Today, I felt downhearted and blue”; $\alpha = 0.93$ for Day 1).

Time since spouse death.—Measurement included a three-level categorical variable that grouped together different increments of days since the death of the spouse ($1 = less than 56$ days, $2 = between 57$ and $84$ days, and $3 = more than 85$ days). For example, if a widow noted that her spouse died 29 days before she filled out the initial diary entry, then Day 1 of the daily diary questionnaire represents 29 days since the death of her spouse and Day 98 of the daily diary questionnaire represents 126 days since the death of her spouse—overall range: 19–140 days.
Global-Level Measure

Present grief.—Using a subscale of the Texas Revised Inventory of Grief (TRIG; Faschingbauer, Zisook, & DeVaul, 1987), the widows indicated their present level of grief at each wave. Example items included, “I still cry when I think of my spouse” and “No one will ever take the place of my spouse in my life.” The widows indicated the level of truth to each statement (1 = not at all true to 4 = completely true; α = 0.90 at Time 1).

RESULTS

Analyses Plan

Similar to Rafaeli and colleagues (2007), we used within-person association between daily positive and negative affect as the measure of affect synchrony. Using multilevel random coefficient (within-person variation) modeling (Bryk & Raudenbush, 2002), we tested three major concepts of affect synchrony: (a) mean levels (through fixed effects), (b) variability (through random effects), and (c) the prediction of the synchrony scores over time (through cross-level interactions with “time since death” and daily positive affect). Model 1 specified the prediction of daily positive affect on negative affect. The covariate in the model included a between-person effect of positive affect because the raw coefficient of positive affect does not solely reflect within-person effects (i.e., the model constrains the between- and within-person slopes to be equal; Sliwinski, 2008). Model 2 adds the time since spouse death variable, and Model 3 examines the interaction between daily positive affect and time since spouse death to assess whether affective synchrony varies over time.

Next, we explored the predictive utility of synchrony scores using multiple methods. Analyses included using trajectory models (Jones, Nagin, & Roeder, 2001) to explore the different subgroups that may be present based on change in synchrony scores during the 98 days of the daily diary study. Each trajectory encompassed different patterns of covariation in affect, including resilience (i.e., consistent low desynchrony or asynchrony), recovery (i.e., more desynchronous scores initially; over time scores become less desynchronous), chronic grief (consistent high levels of desynchrony over time), and delayed grief (i.e., less desynchrony, initially; over time, these widows became more desynchronous). Finally, we examined the predictive nature of these trajectories, using multilevel models, on present levels of grief over the four waves of global-level data.

Level and Variability of Synchrony Scores

Results for findings on level and variability of synchrony scores are presented in Table 1. The significant fixed-effect estimate of the simple within-person multilevel model indicated a moderately negative average association between daily positive and negative affect (estimate = −0.33; Model 1). The significant random effect of daily positive affect in Model 1 (estimate = 0.04) indicates the presence of individual differences in the association with daily negative affect (Figure 1).

Individual Change in Synchrony Scores and Time Since Death

Next, we assessed whether time since loss of the spouse explained individual differences in synchrony scores. Here, we assessed whether time since the loss of the spouse (i.e., the increments of days since the loss of the spouse) moderated the association between daily positive and negative affect. The interaction effect suggested that greater time since the loss of a spouse resulted in a less desynchronous average daily experience of positive and negative affect (Table 1; Model 3 fixed effect). Also, the significant random effect of this interaction suggests that there are individual differences in slope representing individual differences in synchrony scores over time. Figure 2 depicts both the fixed and random interaction effects—the positive general linear trend across time indicates that, on average, as widows move further from the death of their spouse, covariation between positive

<table>
<thead>
<tr>
<th>Model</th>
<th>Fixed effects</th>
<th>Random effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
<td>SE</td>
</tr>
<tr>
<td>Intercept</td>
<td>15.74***</td>
<td>2.25</td>
</tr>
<tr>
<td>Daily positive affect</td>
<td>−0.33***</td>
<td>0.04</td>
</tr>
<tr>
<td>Mean positive affect</td>
<td>0.27***</td>
<td>0.06</td>
</tr>
<tr>
<td>Time since loss</td>
<td>−0.22***</td>
<td>0.06</td>
</tr>
<tr>
<td>Daily positive affect × time since loss</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>63.13***</td>
<td>16.92***</td>
</tr>
<tr>
<td>Daily positive affect</td>
<td>0.04***</td>
<td>0.01***</td>
</tr>
<tr>
<td>Daily positive affect × time since loss</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>5.06***</td>
<td>0.14***</td>
</tr>
</tbody>
</table>

Note: *p < .05. **p < .01. ***p < .001.
Figure 1. Widowhood sample: Frequency distribution of average synchrony scores.

Figure 2. Widowhood sample: Affective synchrony scores $\times$ time since death.
and negative affect becomes less desynchronous. Here, we also see the significant individual variation in affect scores across the three time points, reflecting not only the individual differences in the average relationship of positive and negative affect, but also the individual differences in this relationship over time. Widows’ average trajectory of synchrony scores reflected a pattern of recovery, as evidenced by the gradual decrease in desynchrony as widows moved further away from the death (Figure 2).

**Posthoc analyses.**—The multilevel models presented here do not include several demographic factors that if used as control variables in the model could have important implications on the model outcome. The addition of basic demographic variables to the multilevel model (e.g., age, education, income, and overall physical health) inflated the standard deviations, rendering the models unreliable. Therefore, we examined the correlations between these variables and the outcome (negative affect) and the key predictor (positive affect). The correlations show that although there are relationships between positive and negative affect and the covariates, none are high enough to warrant concern that conclusions drawn from the present model are confined in any way by other characteristics of the sample (Table 2).

**Trajectories of Widows and Change in Synchrony Scores Over Time**

The next step in the analysis assessed patterns of change across the first few months of bereavement to assess differences in synchrony patterns over time. Using the prototypical patterns of disruption in normal functioning following loss or trauma as guide (i.e., Bonanno, 2004; resilience [mild to no disruption], recovery [elevated disruption followed by mild to no disruptions across time], chronic [elevated disruptions across time], and delayed [mild disruption immediately following the loss followed by elevated disruptions]), we explored the individual synchrony score trajectory for each widow in the study.

**Overview of group-based trajectory models.**—Using PROC TRAJ (Jones et al., 2001), we conducted Group-Based Trajectory Models—a semiparametric method to identify distinct clusters of individual trajectories among this sample of widows. Each trajectory has a set of model parameters (i.e., intercept and slope), and the scale of the variable of interest (i.e., synchrony scores) dictates the probability distribution to be used to estimate the parameters (see Andruff, Carraro, Thompson, Gaudreau, & Lovet, 2009; Jones et al., 2001; Nagin, 1999 for more information). The model that provides the best fit of the data will be evaluated based on comparison of fit statistics and posterior probabilities, as well as theoretical parsimony (Andruff et al., 2009; Jones et al., 2001).

First, we tested a single-quadratic trajectory model. Because the quadratic component of this model was significant, we moved to testing two- and three-trajectory models. Using the prototypical patterns of disruption (Bonanno, 2004), as a guide to what changes in synchrony scores over time might indicate, we also tested a four-trajectory model. Although Bayesian information criterion (BIC) values indicated that a three-group solution best fit the data, a two-group solution was selected over the three- and four-group solutions because one trajectory in each of these solutions consisted of less than 5% of the sample. Thus, the two-group solution was selected because it had a conceptually clear model, an adequate percentage of the sample in each trajectory group, and a satisfactory BIC value (see Table 3 and Jones et al., 2001 for more detail).

Based on the results from the final model presented in Table 3 and in Figure 3, several findings emerged. Based on the pattern of covariation in affect, the two groups encompass: (a) a “delayed negative reaction” group (Group 1 in Figure 3; these widows became less emotionally complex overtime)—the trend for this group is quadratic (i.e., one turn in the trajectory line—synchrony scores become less desynchronous from Time 1 to Time 2 and then dramatically increase in desynchrony between Time 2 and Time 3) and (b) a “resilient” group (Group 2

![Table 2. Correlations Between Negative and Positive Affect and Various Demographic Covariates](image)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Daily negative affect</th>
<th>Daily positive affect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily negative affect</td>
<td>1.00</td>
<td>−0.44***</td>
</tr>
<tr>
<td>Daily positive affect</td>
<td>−0.44***</td>
<td>1.00</td>
</tr>
<tr>
<td>Mean positive affect</td>
<td>−0.29***</td>
<td>0.85***</td>
</tr>
<tr>
<td>Time since loss</td>
<td>−0.07***</td>
<td>0.05*</td>
</tr>
<tr>
<td>Age</td>
<td>0.05**</td>
<td>−0.05*</td>
</tr>
<tr>
<td>Education</td>
<td>0.08***</td>
<td>0.08***</td>
</tr>
<tr>
<td>Income</td>
<td>−0.11***</td>
<td>−0.10***</td>
</tr>
<tr>
<td>Overall physical health</td>
<td>0.08***</td>
<td>−0.18***</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01. ***p < .001.

![Table 3. Hierarchical Trajectory Models](image)

<table>
<thead>
<tr>
<th>Model</th>
<th>Intercept</th>
<th>Linear</th>
<th>Quadratic (delayed reaction)</th>
<th>Quadratic (resilient)</th>
<th>Linear (resilient)</th>
<th>Sigma</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>−1.06***</td>
<td>0.19</td>
<td>−0.14*</td>
<td>0.06</td>
<td>0.06*</td>
<td>0.14</td>
</tr>
<tr>
<td>2</td>
<td>−0.37***</td>
<td>0.05</td>
<td>0.06*</td>
<td>0.02</td>
<td>0.14*</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group membership</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>33.79%</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>66.21%</td>
</tr>
</tbody>
</table>

Notes: *Bayesian information criterion (BIC) = 13.93.
*BIC = 22.02.
*p < .10. **p < .05. ***p < .01. ***p < .001.
AFFECTIVE SYNCHRONY

in Figure 3; generally speaking, these demonstrated emotional complexity. The widows whose profiles of change are best represented by Group 1 (34%; n = 11) tended to report mild desynchrony in affect which got less desynchronous from Time 1 to Time 2 and then became more desynchronous by Time 3—the reaction to the death appears “delayed.”

The widows in Group 2 (66%; n = 23) remained at lower levels of desynchrony over the time since their husband’s death; we consider them to be “resilient.” The trend for this group is linear rather than a quadratic trend. Widows whose profile of change that is best characterized by Group 2 begin mildly desynchronous at Time 1, experienced a mild decrease in desynchrony by Time 2 and remained weakly desynchronous by Time 3.

Predictive Nature of Widow Trajectories

In our final analysis, we used the resilience trajectory as the main predictor of present grief during 1 year of data collection (four waves). In Table 4, we report that there is a significant trajectory type × wave effect and exemplified in Figure 4. Members of the “resilient” and “delayed reaction” trajectories, on average, both demonstrate fairly high levels of grief approximately one month and four months postloss; however, as the time from loss increases, those in the resilient trajectory reported lower levels of grief, whereas those in the delayed reaction trajectory showed an increase on their reported levels of grief. Given that widows in the delayed reaction trajectory eventually experienced higher levels of desynchrony, this idea that they reported higher levels of grief when further removed from the death is complementary to their increased desynchrony scores.

DISCUSSION

This examination of covariation in affective states revealed that although desynchrony is typical among women grieving the loss of their husbands, it also highlighted that (a) there are individual differences in the within-person structure in affect and (b) dynamic processes involving negative and positive affect accounts for variations in the affect structure (Rafaeli et al., 2007; Reich, Zautra, & Potter, 2001; Zautra, 2003). The preceding work probably best exemplifies what we examined in this study—that is, stress decreases emotional complexity and creates desynchrony of affect. That is, during a stressful time or during a stressful experience, people are less able to differentiate their positive and negative emotions. Taken together, the findings from this study highlight a central theme: Emotional complexity is beneficial to recovery from conjugal loss.

Emotional complexity focuses on the ability to preserve and maintain boundaries between positive and negative affect, which contributes to emotional control and more optimal outcomes in the face of adversity (Epel et al., 1998; Stroebe et al., 2001), as well as being indicative of resilience (Ong & Bergeman, 2004). Applying the principles of emotional complexity to the findings presented...
here suggests that asynchrony in affect is more advantageous and reflective of resilience than desynchrony. When situations become stressful, negative affect dominates positive affect and thus emotions are viewed as either “good” or “bad” (Coifman et al., 2007; Zautra, 2003). The result is less emotional complexity and more desynchrony of affect. Here, the widows’ activation of intense negative affect—likely due in part to the stress tied to the death—triggered bipolarity in affect or desynchrony. Figure 1 exemplifies this idea—on average, these widows are experiencing more negative than positive affect. Yet, the spread in the scores prompted us to explore the data at the idiographic level.

The bottom line is that desynchrony in affect does not necessarily mean that there will be more negative affect experienced, but it is likely that is the case. The experience of a stressful event can change the subjective experience of affect, as cognitive resources become narrow and focused. Furthermore, this experience of affect may shift again when stress decreases and positive experiences begin to “undo” the effect of the negative stressful experience. This is where emotional complexity will emerge—that is, the widows are better able to differentiate between their positive and negative affect. This has been found to be the affective experience during times of little to no stress.

**Synchrony Effects Over Time: Resilience, Recovery, or Delayed Negative Effects?**

Theories of resilience and recovery posit that traumatic life stressors do not destine an individual to a lifetime of maladjustment—in fact, most people are able to either recover from the trauma or maintain the ability to function at a high level (Bonanno, 2004; Masten & Powell, 2003; Montpetit et al., 2010). This may be more apparent for individuals who are able to recover or who are resilient to adverse events. Exploration of significant ideographic effects (i.e., individual differences) in the multilevel model was done by examining synchrony with respect to the amount of time since the husband’s death (Figure 2). Our exploration of the individual synchrony scores at each time point highlighted that the widows fell into two groups, based on their level and patterns of emotional complexity: (a) a resilient group and (b) a delayed negative reaction group. Although at a different timescale, these trajectories are similar to two of Bonanno’s (2004) prototypical patterns. Specifically, in our “resilient” group, the shape of the trajectories demonstrate that there are some widows who are able to establish emotional control over time—a marker of successful adaptation to the death (Kessler et al., 1985; Stroebe et al., 2001). Widows in this trajectory are better able to maintain differentiation between

<table>
<thead>
<tr>
<th>Model</th>
<th>Estimate</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>27.85</td>
<td>14.45</td>
</tr>
<tr>
<td>Delayed trajectory group</td>
<td>17.85</td>
<td>6.40</td>
</tr>
<tr>
<td>Wave</td>
<td>-1.92***</td>
<td>0.54</td>
</tr>
<tr>
<td>Delayed trajectory × wave</td>
<td>1.80**</td>
<td>0.66</td>
</tr>
<tr>
<td>Age</td>
<td>0.11</td>
<td>0.19</td>
</tr>
<tr>
<td>Education</td>
<td>0.27</td>
<td>0.73</td>
</tr>
<tr>
<td>Income</td>
<td>-0.33</td>
<td>0.69</td>
</tr>
<tr>
<td>Intercept</td>
<td>39.29***</td>
<td>13.08</td>
</tr>
<tr>
<td>Wave</td>
<td>-0.13</td>
<td>0.85</td>
</tr>
<tr>
<td>Residual</td>
<td>12.21***</td>
<td>2.40</td>
</tr>
</tbody>
</table>

*Notes:* The reference group of the trajectories was the resilient trajectory. *p < .05. **p < .01. ***p < .001.

Figure 4. Plot of trajectory groups predicting level of present grief over the first postloss year.
negative and positive affect, both initially and as they move further from the death than people categorized by delayed negative reaction—a hallmark of emotional complexity. These findings are also consistent with Coifman and colleagues (2007), who found that at 4 months postloss, adults exhibited less desynchronous correlations between positive and negative affect for bereaved resilient individuals than for bereaved adults who were identified as symptomatic.

Although Bonanno (2004) hypothesized that there are four prototypical patterns of disruption, we only found two related trajectories in the presented analyses. There are a couple of different reasons as to why we did not see trajectories similar to chronic grief and recovery. First, as we said earlier, we are examining our widows on a different timescale than Bonanno used for his hypothesis (approximately three months vs. two years, respectively). If we examined these widows on a daily basis for longer than 3 months, and continue to let their grief process unfold, it is very possible that we might see other patterns emerge. Second, the number of widows that we have in our sample may have truncated our possibility of finding other patterns. Given that more than half of the sample (66%) were considered to be “resilient,” it appears that the widows in this study are in relatively good health (i.e., they had relatively good levels of income, they were educated for their cohort, and many of the widows were able to live alone). A potential future work includes examining a larger and more diverse widow sample to see if the findings presented here not only hold, but are also enhanced.

Widowhood Trajectories and Implications for Grief Resolution

Our analyses also highlighted the predictive power of the widow trajectories. Beginning with the “resilient” group, the trajectory include the largest number of widows, and the widows in this group showed less evidence of desynchrony and also had lower mean levels of grief across the first year following the loss. It was not surprising to find that the widows in the less emotionally complex delayed negative reaction group displayed higher mean levels of grief than the widows in the resilience group. Following this trajectory over time, it is perhaps also not surprising that we see an increase in reported grief among these widows. As they become less emotionally complex, experiencing negative emotions, like grief, becomes more pervasive. The differences between the groups on reported grief certainly highlights the protective nature of being more emotionally complex over the course of bereavement. Past research has indicated this buffering effect—that being more emotionally complex is associated with less sustained negative affect and faster recovery following stressful experiences (Epel et al., 1998). Furthermore, the patterns of some of these trajectories may speak to the “roller coaster” effect of emotions reported by widows and fluctuations in mood during the days and weeks following the death (Blazer, 1990; Thomas et al., 1988). Examination of the widows for more than 98 days may result in a different pattern for those displaying delayed reactions (e.g., this pattern may take some additional “turns” and/or other patterns may emerge among these widows). Thus, our percentages showing delayed negative reactions may reflect those reported by other scholars (Bonanno, 2005).

Limitations

We note a few limitations of this study. Because widowers were not included in this study, these findings cannot be generalized to the emotional experiences of bereaved men. Furthermore, because of the nature of the sample used in this study (e.g., small number of widows and a fairly homogeneous sample), we should be cautious in generalizing these findings to other samples of widows. Although there are limits to the sample, the merit of this study is based on the interesting and complex questions asked, not on inferences we can make to other populations. Finally, this study does not have preloss data, which affects the ability to make causal inferences about how the loss affected the widows. In effect, we are only assuming that their affective synchrony was perturbed. A related limitation is that we did not really find asynchrony in affect but rather lower levels of desynchrony in the “resilient” widows. This may be because (a) we did not follow the widows long enough although their trajectories were heading in that direction and (b) older adults may be different from younger adults (Labouvie-Vief et al., 2007) in that they generally may be more desynchronous. Without preloss levels of synchrony, we really do not know whether they have returned to previous levels of functioning.

Conclusions

What this study ultimately impresses upon us is that when widows have the ability to differentiate between positive and negative affect, they are likely to eventually have a positive grief experience over time, whereas bipolarity in affect indicates poor adjustment. Although there is significant distress following the death of a spouse, the findings presented here show that there is opportunity for adaptation and readjustment to a new life in the months following the death of a spouse. From a risk and resilience perspective, the death of a spouse is an event that can affect well-being for a length of time; although some people never quite recover from the death, it does not mean that others cannot experience optimal levels of well-being and start their life anew. Keeping emotions within bounds and regaining emotional control after the loss is ultimately important for higher levels of emotional functioning. Thus, it is ever more important to understand not only covariation in affect among an at risk group but also how there are individual differences in covariation in affect and that these differences in covariation have predictive utility for well-being a year after the death of a husband. This study moves beyond
simply understanding well-being outcomes in the context of conjugal loss and how those who are resilient may respond more positively in the weeks and months following the loss, but to how those who are resilient and those who are not have a different emotional response to the loss, which ultimately plays a large role in well-being months after the loss. Indeed, this study is a strong and an important foray into understanding how emotional regulation is an important facet of the bereavement process.

FUNDING
This work was supported by the National Institute on Aging (1 RO3 AG18570-01) and William Kirby Endowment for Research, University of Notre Dame.

REFERENCES
AFFECTIVE SYNCHRONY


