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Posttraumatic Growth in Survivors of Intimate Partner Violence: An Assumptive World Process

Christine E. Valdez[1] and Michelle M. Lilly[1]

Abstract

Adverse consequences of intimate partner violence (IPV) are well documented, whereas less research has explored positive changes. Recent efforts indicate that survivors report posttraumatic growth (PTG), but the schema reconstruction hypothesis by which this is achieved is in need of further investigation. One model of PTG suggests that growth is triggered by trauma(s) that challenges an individual's assumptive world. This threat promotes cognitive processing and schema reconstruction that fosters a sense of meaning and value in one's life. As schema change is posited as the main cognitive antecedent of PTG, a longitudinal assessment of world assumptions was used to examine whether assumption change predicts PTG in IPV survivors. Results indicate that world assumptions became more positive 1 year after an initial interview but only for women who had not been revictimized in the year between study assessments. Furthermore, positive world assumption change was associated with greater PTG scores. Implications for intervention and research are discussed.

[1]Northern Illinois University, DeKalb, USA

Corresponding Author:
Christine E. Valdez, Department of Psychology, Northern Illinois University, PM 400, DeKalb, IL 60115, USA.
Email: cvaldez1@niu.edu

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Intimate partner violence (IPV) is a prevalent social problem, and the effects on victims are dire. According to the National Crime Victimization Survey, more than one million people reported that incidents of violence against a current or former girlfriend, boyfriend, or spouse occurred in 2011 (Truman & Planty, 2012). Women comprise the majority of victims, as one statistic reports that 1.5 million women and 800,000 men in the United States report experiencing IPV in their lifetime (Tjaden & Thoennes, 2000). IPV is not just a U.S. phenomenon; it affects women around the world. For example, recent population-based surveys estimate that 30% of ever-partnered women have experienced physical and/or sexual IPV, with prevalence being highest in the African, Eastern Mediterranean, and South-East Asian regions, where the prevalence rate increases to approximately 37% (Department of Reproductive Health and Research, World Health Organization, 2013). Although a worldwide phenomenon, this study will focus on women in the Midwest region of the United States. Aside from physical injury, IPV can contribute to significant mental health problems, including depression, posttraumatic stress disorder (PTSD), and substance abuse/dependence (e.g., Nathanson, Shorey, Tirone, & Rhatigan, 2012). Thus, it is understandable that research on IPV has predominantly focused on its negative consequences.

More recently, however, research has moved away from an exclusive focus on the negative aftermath of traumatic experiences. There is now a large and growing literature documenting that trauma survivors identify positive changes as a result of a traumatic event (Helgeson, Reynolds, & Tomich, 2006), which have been referred to in the literature as "posttraumatic growth," (PTG) "stress-related growth," and "benefit finding." Focusing on positive posttrauma changes is not to discount the adverse effects that may result from trauma. In fact, it has been proposed that positive posttrauma changes occur through the process of making meaning out of a traumatic event that, at least initially, resulted in high levels of psychological distress (Tedeschi & Calhoun, 2004). Yet over time, survivors often begin to perceive their trauma or victimization in a new way that fosters a sense of meaning and value in their lives.

One model of PTG (Tedeschi & Calhoun, 1996) conceptualizes growth as positive changes being attained by some individuals as a result of their struggle in surviving a highly stressful event. Using qualitative data, Tedeschi and Calhoun (1995) initially identified three general domains of PTG: changes in

the perception of the self, changes in the experience of relationships with others, and changes in one's general philosophy of life. Subsequently, using factor analysis, they identified five factors in their PTG Inventory (PTGI; Tedeschi & Calhoun, 1996): personal strength, new possibilities, relating to others, appreciation of life, and spiritual change. There is now ample evidence of the universality of PTG, with individuals from different cultures and subcultures from around the world reporting benefits from their struggle with traumatic or highly stressful life events (see Weiss & Berger, 2010, for a review).With regard to assault survivors, PTG has been reported in several domains of life. Adult female survivors of childhood maltreatment have reported being more determined in life, a quest for learning, and greater self-awareness (Hall et al., 2009). Sexual assault survivors have reported increased empathy, better relationships, and an increased appreciation for life as a result of their trauma (Frazier, Conlon, & Glaser, 2001). Other studies with adult female survivors of childhood sexual abuse reported that survivors learned to look out for themselves, developed stronger relationships with God, felt increased empathy for other sexual abuse survivors, and became stronger or better people as a result of experiencing sexual abuse (Draucker, 2001; McMillen, Zuravin, & Rideout, 1995; Shakespeare-Finch & De Dassel, 2009).

Although there is a growing body of literature on PTG in traumas similar to IPV, examination of PTG in IPV survivors has lagged behind, although there is some evidence to suggest that IPV survivors experience PTG. Using interviews with 15 IPV survivors, Smith (2003) discovered that after the experience of abuse, women's self compassion had increased, they became more self-reliant and assertive, they gained a greater sense of self, and they discovered a greater purpose in life. Senter and Caldwell (2002) found similar themes in interviews with nine women who had left abusive relationships, in addition to an increased ability to accept support from others, increased self-awareness and introspection, stronger faith and religious beliefs, and stronger interpersonal relationships with supportive others. Only one known study by Cobb, Tedeschi, Calhoun, and Cann (2006) has systematically investigated PTG using a psychometrically sound measure, the PTGI (Tedeschi & Calhoun, 1996), in a sample of 60 IPV survivors. Cobb and colleagues (2006) found that the majority of women evidenced PTG, even more PTG than reported in a sample of violent crime survivors (Peltzer, 2000). In addition, they found that women who left an abusive relationship showed more overall growth than those who stayed with an abuser, suggesting that growth may be maximized after the resolution of trauma.

One perspective on PTG suggests that the possibility of growth is triggered by a traumatic event that challenges an individual's fundamental

assumptions about his or her self and the world, thereby destroying long-standing assumptions about the world's benevolence, the world's meaningfulness, and one's self-worth (Janoff-Bulman, 2006). World assumptions theory proposes that these three basic assumptions create an illusion of invulnerability that allows one to operate in the world with a sense of agency (Janoff-Bulman, 1992). Trauma exposure threatens the assumptive world and promotes cognitive processing and schema reconstruction, whereby individuals adopt or rebuild new assumptions to accommodate their traumatic experience. Consequently, trauma survivors may develop more negative cognitions about the world and their self, as an adverse event such as a trauma is often difficult to reconcile with generally optimistic core beliefs. In fact, it has been observed that trauma survivors around the world describe the world as malevolent, not meaningful, and report low self-worth, including Iraqi civilians exposed to a bombing (Freh, Chung, & Dallos, 2013), female survivors of sexual trauma and the Virginia Tech campus shooting (Littleton, Grills-Taquechel, Axsom, Bye, & Buck, 2012), U.S. women exposed to IPV (Lilly, Valdez, & Graham-Bermann, 2011), Holocaust survivors (Palgi, Shrira, & Ben-Ezra, 2011), and Israeli ex-prisoners of war (Solomon, Lev-Shalem, & Dekel, 2007). With regard to PTG, as schema reconstruction begins to incorporate the view that the world is meaningless, random, and uncontrollable, one makes peace with a less-secure existence and becomes more conscious of living (Janoff-Bulman, 2006). That is, life takes on new value and one considers what is important, reprioritizes, and makes conscious decisions about how to live. Over the course of successful coping, a victim stops asking, "Why me?" and shifts focus from the *meaning of life* to the *meaning in life*. It is through this process of schematic reconstruction that one's life is no longer wholly defined by his or her trauma.

Studies have found that both the degree of disruption to assumptive world beliefs and deliberate rumination predict PTG (Cann et al., 2010; Cann et al., 2011, respectively). Yet, data on the schema reconstruction hypothesis, one of the final steps in the proposed process by which PTG is achieved, is lacking. Carboon, Anderson, Pollard, Szer, and Seymour (2005) conducted a longitudinal study with cancer survivors to elaborate the links between world assumption change and PTG. They found that world assumptions did not change from baseline (1 month post diagnosis) to primary treatment completion (6 months post diagnosis). In addition, some aspects of world assumptions at baseline were associated with some domains of growth after treatment completion, but in unexpected directions. Carboon et al. (2005) suggest the results provide preliminary evidence for the stability of assumptions over a highly stressful event and evidence against the hypothesis that schema revision is a necessary antecedent of PTG. However, the study may be limited in

the population under investigation, as one must consider the nature and severity of an event to fully appreciate and comprehend PTG (Janoff-Bulman, 2006). It is not the losses to one's health, home, community, or a loved one that define an event as traumatic but the event's ability to shake the foundations of the individual's assumptive world. It has been proposed (Janoff-Bulman, 1992) and research has demonstrated (Lilly et al., 2011) that interpersonal forms of trauma are more deleterious to assumptive schemata than non-interpersonal forms of trauma. It may be that the greater impact of such an event provides more opportunity for re-evaluation and greater growth. The study by Carboon et al. (2005) may also be limited in the time lag between baseline and treatment completion (6 months), during which participants may not have had sufficient time for schema reconstruction.

The purpose of the present study is to further examine the link between quantitative reports of schema change and PTG in a sample of U.S. IPV survivors who reported recent exposure to physical IPV. It was of interest to examine whether interpersonal revictimization within a year after initial assessment is associated with world assumption change and PTG, given the finding by Cobb et al. (2006) that greater growth occurred for women who left an abusive relationship compared with those who stayed with an abusive partner. It is hypothesized that world assumptions will become significantly more positive from initial to final assessment, but only for women not revictimized, as interpersonal revictimization may thwart opportunities to accommodate traumatic experiences into one's assumptive schemata. As such, it is hypothesized that women who are not revictimized will report more positive world assumptions and PTG at final assessment than revictimized women, but that there will be no difference in world assumptions at the initial assessment. It is further hypothesized that world assumptions at final assessment, but not at initial assessment, will be positively associated with PTG, as it is the reconstructed schemas that are proposed to be associated with growth. Last, it is hypothesized that more positive world assumption change will predict greater PTG.

Method

Procedure

Women who participated in this study completed self-report questionnaires at two time points, approximately 1 year apart. At Time 1, women who had experienced at least one physically violent incident with a partner in the preceding 6 months were recruited from the Northern Illinois community for a larger study on contextual factors and correlates of IPV. Women were recruited on a rolling basis over the course of 17 months through advertisements in local

commercial locations (e.g., grocery stores and Laundromats), county court buildings, social service agencies, local newspaper advertisements, and doctor's offices. Potential participants called the advertised phone number to learn more about the study that was described as a study on adverse life events. During this phone conversation, research assistants prescreened participants using a standard form, which asked specific questions about their romantic relationship experiences to determine whether they experienced IPV in the previous 6 months. Women were excluded if they had not experienced at least one act of physical IPV in the previous 6 months. Women who met inclusionary criteria scheduled an appointment to come into the lab for a research session. The research session involved first completing a packet of self-report questionnaires and then participating in a semi-structured interview (see Valdez, Lim, & Lilly, 2013 for more information about interview results). Child care was provided by research assistants, and transportation via cab services was provided when needed. Women were paid US$50 for their time. At the conclusion of the study, interested women consented to give their telephone number for future studies.

Approximately 1 year after their initial participation, eligible women were contacted with the telephone number they gave at Time 1 to participate in a second assessment (i.e., Time 2), which involved coming into the research lab to complete a packet of follow-up self-report questionnaires that took approximately 1 hr. Again, child care was provided to participants when needed, and women were paid US$20 for their time. Women were eligible for the second assessment once the 1-year benchmark of their first interview had passed. In total, 93 IPV survivors were contacted by telephone approximately 1 year after Time 1 and 23 women participated at Time 2, with a follow-up rate of 24.7%. Of the 70 women who did not participate in the second interview, 57 were unreachable (i.e., their telephone numbers on file were disconnected), 7 women had moved out of the area, 3 women were not interested in participating at Time 2, and 3 women were scheduled for Time 2 but did not come to the appointment (follow-up attempts to reschedule were made to no avail). Both phases of this study were approved by Northern Illinois University's Institutional Review Board (IRB), and written informed consent was obtained. Women were debriefed at the conclusion of each interview.

Participants

For the 23 women who returned for the final assessment (Time 2), the average age was 30.91 (SD = 10.54), which ranged from 18 to 50; one participant declined to provide her age. The majority were African American (60.9%, n = 14), 26.1% were European American (n = 6), 4.3% were

Hispanic ($n = 1$), and 8.7% identified as Biracial ($n = 2$). Most of the women were single (43.5%, $n = 10$), 30.4% were living with a partner ($n = 7$), 13% were married ($n = 3$), and 13% were separated ($n = 3$). The majority of women were unemployed (65.2%, $n = 15$), whereas those currently employed worked between 8 and 38 hr per week ($M = 22.88$, $SD = 10.28$). The total household income for the month preceding the Time 2 assessment ranged from US$0 to US$3,800 ($M = 1{,}147.81$, $SD = 1{,}007.37$). The highest level of education obtained was reported to be as follows: 8.7%, some high school ($n = 2$); 4.3%, high school degree/General Education Development (GED; $n = 1$); 65.2%, some college or vocational school ($n = 15$); 13% some college degree ($n = 3$); 4.3%, some graduate school ($n = 1$); and 4.3%, graduate school ($n = 1$).

There were no differences between women who did and did not participate at Time 2 with regard to age, $t(90) = 0.57$, $p = .572$; ethnicity, $\chi^2 = 1.03$, $p = .906$; employment status, $\chi^2 = 0.71$, $p = .40$; household income, $t(77) = 0.86$, $p = .395$; education, $\chi^2 = 6.89$, $p = .331$; or total interpersonal trauma victimizations reported at Time 1, $t(89) = 0.59$, $p = .559$.

Measures

Revictimization. Interpersonal traumatic revictimization between Time 1 and Time 2 was assessed with seven questions from the Traumatic Life Events Questionnaire (TLEQ; Kubany, 2004). The TLEQ is a 23-item broad-spectrum measure of trauma exposure that lists behaviorally descriptive, potentially traumatic events, including non-interpersonal (e.g., life threatening illness, natural disaster) and interpersonal traumatic event items. Each item asks respondents to identify how many times they have experienced a particular event using the following rating scale: *never, once, twice, 3 times, 4 times, 5 times*, and *more than 5 times*. However, for the purposes of this study, only interpersonal traumatic events were assessed at Time 2 with seven items from the TLEQ, including being robbed with a weapon, being physically assaulted by a stranger, witnessing physical assault by a stranger, being physically assaulted by an intimate partner, being threatened with serious physical injury or death, being sexually assaulted, and being stalked. Previous research has demonstrated these types of traumas to be associated with endorsement of intense fear, helplessness, and horror, especially among women (Valdez & Lilly, 2014) and may therefore be more disruptive to one's assumptive schemata (Janoff-Bulman, 1992; Lilly et al., 2011). For this study, a traumatic revictimization dichotomous score was created to classify women into two groups—those who had and had not been interpersonally revictimized between study assessments.

World assumptions. To assess world assumptions, Janoff-Bulman's (1989) World Assumptions Scale (WAS) was used. The WAS is a 32-item self-report measure to assess the eight domains of assumptive world cognitions elaborated in Janoff-Bulman's (1989, 1992) theory. The eight domains include randomness ("Bad events are distributed to people at random"), justice ("Generally, people get what they deserve in this world"), controllability of the world ("Through our actions we can prevent bad things from happening to us"), benevolence of people ("Human nature is basically good"), benevolence of the world ("There is more good than evil in this world"), self-worth ("I am very satisfied with the kind of person I am), self-control ("I usually behave so as to bring the greatest good for me"), and luck ("I am luckier than most people"). Items are rated on a six-point Likert-type scale anchored by "*strongly agree*" (1) and "*strongly disagree*" (6). A total score was used in the present study and generated by reverse scoring specified items and summing responses, with higher scores indicating more positive world assumptions. World assumptions were assessed at Time 1 and Time 2 in the present study. Internal consistency for the WAS at Time 1 and Time 2 was calculated as Cronbach's $\alpha = .65$ and .82, respectively. Time 2 Cronbach's alpha is similar to another study with a different sample of IPV survivors in which Cronbach's alpha was .85 (Lilly et al., 2011).

PTG. The PTGI (Tedeschi & Calhoun, 1996) was used to assess growth scores at Time 2. The PTGI is a 21-item self-report inventory that measures an individual's perception of positive change following a traumatic life experience. Items are rated on a scale from 0 ("*I did not experience this change as a result of my crisis*") to 5 ("*I experienced this change to a very great degree as a result of my crisis*"). Responses to items are summed to produce a total PTG score, ranging from 0 to 126, with higher scores indicating more PTG. The PTGI taps into five domains of growth, including new possibilities ("I established a new path for my life"), relating to others ("Knowing that I can count on people in times of trouble"), personal strength ("Knowing I can handle difficulties"), appreciation of life ("An appreciation for the value of my life"), and spiritual change ("A better understanding of spiritual matters"). Internal consistency for the total PTGI score in the normative sample was high (Cronbach's $\alpha = .90$; Tedeschi & Calhoun, 1996). Internal consistency for the total PTGI score in this sample was also high (Cronbach's $\alpha = .96$).

Results

Of the 23 women, 10 reported being interpersonally victimized (i.e., revictimized) between Time 1 and Time 2 (Table 1). Five of the seven interpersonal

Table 1. Rates of Revictimization (n = 10).

	Percentage	Participant (P) Endorsement
Physical assault by a stranger	20	P2, P7
Witnessing physical assault by a stranger	40	P1, P2, P7, P10
Threatened with death or serious injury	40	P2, P5, P6, P7
Intimate partner violence victimization	50	P3, P4, P7, P8, P9
Stalked by a friend or acquaintance	40	P1, P5, P6, P7

traumas assessed were reported; sexual assault and being robbed with a weapon were not experienced between study assessments. Two women reported being physically assaulted by a stranger or someone they did not know very well, four women reported seeing another person being physically assaulted and seriously injured by a stranger, four women reported being threatened with injury or death, five women reported being physically assaulted by an intimate partner, and four women reported being stalked by a friend or intimate partner. Five women reported experiencing one trauma, three women reported experiencing two different types of traumas, one woman reported experiencing three different types of traumas, and one woman reported experiencing all five types of traumas.

On average, world assumption scores became more positive by an average of 2.98 points (SD = 14.63) from Time 1 to Time 2. World assumptions scores became more positive from Time 1 to Time 2 for the majority of women (n = 15, 65.2%) and ranged from an increase of 4 to 22 total world assumptions points, $t(14) = 7.70$, $p < .001$. However, world assumptions became more negative for 26.1% of the women (n = 6) and ranged from −2 to −41 total decreased world assumptions points, $t(5) = 2.50$, $p = .055$. World assumptions scores did not change for 8.7% of the women (n = 2).

With regard to PTG, total scores on the PTGI (M = 62.74, SD = 29.47) indicate that growth was experienced. That is, item ratings on the six-point scale (0 to 5) averaged 3 (“moderate degree of change”). The mean PTGI total score in the present study was similar to that reported by Cobb et al. (2006) in another sample of IPV survivors (M = 68.08, SD = 24.95), $t(81) = 0.83$, $p = .409$. Three women (13% of the sample) reported no growth, as evidenced by mean item ratings below 1 (experienced no change).

As hypothesized, there was no difference in Time 1 world assumptions between women who had and had not reported revictimization between study assessments, $t(21) = 1.08$, $p = .294$; whereas women not revictimized (M = 135.31, SD = 12.76; that is, item ratings averaged between “*somewhat agree*” and “*agree*”) reported significantly more positive world assumptions at Time

Table 2. Correlation Matrix of World Assumptions and Posttraumatic Growth (n = 23).

	M	*SD*	1	2	3
1. Time 1 world assumptions	125.15	17.27	—		
2. Time 2 world assumptions	128.13	15.12	.60**	—	
3. Posttraumatic growth	62.74	29.45	.15	.50*	—

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

2 than women who had been revictimized (M = 118.80, SD = 13.05; that is, item ratings averaged between "*somewhat disagree*" and "*somewhat agree*"), $t(21) = 3.05$, $p = .006$. In fact, world assumptions became significantly more positive from Time 1 to Time 2 but only for women who had not been revictimized ($\Delta M = 6.77$, $SD = 10.25$), $t(12) = 2.38$, $p = .035$.

Correlation analyses (see Table 2) revealed that Time 1 world assumptions are not related to PTG ($r = .15$, $p = .494$), but as predicted, Time 2 world assumptions are positively associated with PTG ($r = .50$, $p = .015$). After controlling for Time 1 world assumptions, more positive world assumptions at Time 2 significantly predicted greater Time 2 PTG, $\beta = 1.25$, $t(20) = 2.71$, $p = .014$, and uniquely accounted for 26.2% of the variance in PTG, $F(2, 20) = 3.98$, $p = .035$. For those who experienced growth (i.e., M score above 1 on the PTGI; n = 20), greater positive world assumption change from Times 1 to 2 predicted Time 2 PTG, $\beta = 1.96$, $t(12) = 2.83$, $p = .016$, and accounted for 36.8% of the variance in PTG scores; whereas more negative or no world assumption change was not associated with PTG, $\beta = .33$, $t(6) = 0.37$, $p = .727$.

Inconsistent with our hypothesis, although women not revictimized reported more PTG at Time 2 (M = 65.23, SD = 31.57) than women revictimized (M = 59.50, SD = 27.82), this difference was not statistically significant, $t(21) = 0.45$, $p = .655$. Because there were differences in world assumption changes from Time 1 to Time 2 between women revictimized and those not, and the increased change in positive world assumptions was associated with PTG, we controlled for revictimization status in the model predicting PTG with world assumptions. Results suggest that, after controlling for revictimization status and Time 1 world assumptions, Time 2 positive world assumptions predicted Time 2 PTG, $\beta = 1.63$, $t(19) = 3.04$, $p = .007$, and uniquely accounted for 31.8% of the variance in PTG, $F(3, 19) = 3.34$, $p = .041$.

Discussion

World assumptions theory proposes that humans hold inherently positive core assumptions about the world's benevolence and meaningfulness, and

one's self-worth (Janoff-Bulman, 1989, 1992). Interpersonal trauma, however, can shatter the very foundation of one's assumptive schemata, leaving a survivor all too aware of a world that is malevolent and threatening. Thus, traumatic experiences pose a major challenge for a survivor to process and integrate the incomprehensible nature of an interpersonal victimization into his or her assumptive schemata. Janoff-Bulman (2006) suggested that it is through this process of schema reconstruction that a trauma survivor begins to accommodate his or her traumatic experience(s) and develop a more balanced perspective of the world that is not wholly defined by malevolence, and also incorporates the view that the world can be meaningless, random, and uncontrollable. The very recognition of the meaninglessness of existence triggers and feeds the creation of PTG. In a world that is not comprehensible, controllable, or predictable, survivors are confronted with the fact that living can no longer be taken for granted and human life appreciates in value. In response, survivors embrace life and create a meaningful existence through goals (interpersonal, spiritual, altruistic), commitments (to friends, family, and community), and self-determination that serve to provide a sense of meaning and purpose.

It was the purpose of this study to further examine the schema reconstruction process by which PTG is attained in a sample of U.S. IPV survivors who reported recent exposure to physical IPV at initial assessment. Consistent with hypotheses, there were no differences in world assumptions at initial assessment, but women not revictimized in the year following the initial assessment reported more positive world assumptions at final assessment. World assumptions became significantly more positive from initial assessment to final assessment 1 year later but only for women not revictimized in that year. Thus, it may be that interpersonal revictimization reinforces negative assumptions constructed from an initial interpersonal trauma, overwhelming the psychological resources of the survivor, essentially disrupting cognitive processing and schema reconstruction.

The majority of our sample (87%) reported PTG, which is consistent with previous research demonstrating that 75% to 90% of survivors report benefits post trauma (Calhoun & Tedeschi, 2006). Consistent with hypotheses, positive world assumptions at final assessment, but not at initial assessment, were associated with greater PTG and accounted for a little more than one quarter of the variance in PTG scores. In fact, for women who reported growth, greater positive world assumption change from initial to final assessment predicted greater PTG and accounted for approximately 37% of the variance in PTG scores. This suggests that women who were able to reconstruct their assumptive schemata into an overall more positive framework, such that the world is perceived as generally controllable,

predictable, and good (although not always), perceived greater growth as a result of their interpersonal victimization.

Inconsistent with hypotheses, there were no significant differences in PTG scores between revictimized and non-revictimized women. However, mean item ratings on the PTGI (Tedeschi & Calhoun, 1996) indicate that women who were not revictimized reported perceiving a "moderate degree of change" in PTG whereas revictimized women reported "a small degree of change." In their model of PTG, Tedeschi and Calhoun (2004) proposed an alternative route to PTG through enduring distress. It may be that women who are revictimized are cognitively and emotionally reminded of what has been lost, and paradoxically, also of what has been gained, and consequently still perceive some benefits as a result of interpersonal trauma, but to a lesser extent than women who are not continuously confronted with threatening and/or malevolent others. In fact, after controlling for revictimization status and initial world assumptions, it was observed that final world assumptions improved the prediction of PTG and accounted for approximately 32% of the variance in PTG scores. Thus, it may be that revictimization status moderates the relation between world assumptions and PTG, although unfortunately, the small sample size limited our ability to empirically test this hypothesis post hoc.

The present study extends previous research on PTG in assault survivors, particularly survivors of IPV, and provides preliminary support for the schema reconstruction pathway to PTG (Janoff-Bulman, 2006). Given that schema reconstruction may be one pathway to fostering PTG, intervention efforts could aim to help assault survivors refocus their anxiety, stemming from attention to mortality and vulnerability, and use it as a catalyst to appreciate existence and recognize new possibilities or paths for one's life. Through the use of cognitive restructuring techniques, a survivor's assumptive world is apt to become more structurally complex, essentially less simplistic and absolutist, and a more solid foundation of one's assumptive schemata forms. Given the universal experience of IPV, shattered assumptions, and PTG among individuals around the world, these techniques may apply to many female survivors of IPV. A positive by-product of this process is the psychological preparedness it may engender. Within a more complex assumptive world, survivors are implicitly aware that misfortune is ever possible, which serves to minimize the likelihood of future victimization overwhelming their cognitive–emotional system, and thereby reduces risk for posttraumatic sequelae if revictimized. This is especially relevant for assault survivors, as it is well documented and further demonstrated in this study that occurrence of revictimization is high.

To our knowledge, this is the first study to examine world assumption change longitudinally and its relation with PTG in assault survivors. This

highlights the fact that there is little empirical longitudinal research on the mechanisms involved in positive posttrauma outcomes, although such mechanisms are essential to understanding adjustment and aiding survivors in the recovery process. This study provides preliminary evidence for the instability of core assumptions subsequent to interpersonal victimization. Future research may further examine the change process from victimization to PTG by using a longitudinal design with several assessment points to model PTG trajectories and analyze within-person, between-person, and interaction effects. Such research designs may better explicate the variables that promote schema reconstruction and subsequent growth, including revictimization, emotion regulation, perceived social support, and coping strategies.

Although this study contributes to the understanding of the schema reconstruction process to achieving PTG, there are inherent limitations. There was low internal consistency of Time 1 world assumptions. Given that all participants at Time 1 reported being physically assaulted by an intimate partner within the previous 6 months, it may be that survivors were in the process of rebuilding their assumptions and, therefore, their responses to items were not internally consistent. This study is also limited by its small sample size, and the results should therefore be considered preliminary in nature and subject to replication. Retaining survivors of IPV in longitudinal research is challenging, as abused women often face safety concerns, housing and employment instability, poverty, difficulty coping with traumatic reactions to violence, and major life transitions that make them a very mobile population and difficult to locate. That was exemplified in this study in which the vast majority of women had disconnected phone numbers. Although the results from this study are robust given the sample size, it is important to interpret the results with caution as small sample sizes can limit the precision of point estimates within the data. Replication with a larger sample size is warranted.

In addition, the small sample size of IPV survivors may be considered a limitation as results may not generalize to all IPV survivors, although it is a step toward illuminating mechanisms involved in PTG for IPV survivors on which future research and theory can be built. It was not surprising that the majority of IPV survivors in this study identified as African American, given the vast amount of research documenting that African American women report more frequent and severe IPV than European American women (Caetano, Field, Ramisetty-Mikler, & McGrath, 2005; Frias & Angel, 2005; Hall Smith, Thornton, DeVellis, Earp, & Coker, 2002; Krishnan, Hilbert, VanLeeuwen, & Kolia, 1997; Rennison & Welchans, 2000; Straus & Gelles, 1986; Straus, Gelles, & Steinmetz, 1980). However, the small sample size limited our ability to empirically examine interethnic differences among the constructs of interest to this study, although past research has failed to

demonstrate differences in world assumptions scores among African American and European American IPV survivors, despite African American women reporting more IPV (Lilly, Howell, & Graham-Bermann, in press). Future research with a larger sample size might examine interethnic differences in PTG and how potential differences relate to other important variables in the PTG process, such as distress. Other elements of culture may also be important to examine in relation to PTG among IPV survivors. We refer the reader to Calhoun, Cann, and Tedeschi (2010) for some suggestions on cultural factors that may affect the possibility of PTG.

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Author Biographies

Christine E. Valdez is a doctoral student in the clinical psychology program at Northern Illinois University. She earned her BA in psychology in 2008 from California State University, East Bay. There, her research spanned the area of traumatic life experiences, with a particular focus on intimate partner violence (IPV) and the role of attachment in abusive relationships. Her broad research interests include interpersonal trauma and revictimization. In particular, she is interested in studying cognitive and emotional processes that contribute to posttraumatic sequelae and recovery from trauma.

Michelle M. Lilly is an assistant professor at Northern Illinois University. She earned her doctorate in clinical psychology and women's studies at the University of Michigan in 2008 and completed a postdoctoral fellowship at the Psychological Clinic in Ann Arbor, Michigan. Her research has focused predominantly in the areas of IPV, posttraumatic stress disorder (PTSD), and the mediating role of ethnicity, coping, world assumptions, and religiosity. She has also done research in the area of first responders and the role that emotional processing and cognitions play in predicting mental health outcomes. She has broad interests in the ways in which attachment, emotions, cognitions, and gender intersect to predict mental health outcomes and recovery following trauma exposure. Future work will expand to study pathogeneses of adverse outcome following trauma exposure and recovery.