Assessment and Prediction of Stress-Related Growth

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ABSTRACT This article reports the development of the Stress-Related Growth Scale (SRGS) and its use in a study examining determinants of stress-related positive outcomes for college students. Study 1 analyses showed that the SRGS has acceptable internal and test-retest reliability and that scores are not influenced by social desirability. Study 2 analyses showed that college students' SRGS responses were significantly related to those provided by friends and relatives on their behalf. Study 3 analyses tested the determinants of stress-related growth longitudinally. Significant predictors of the SRGS were (*a*) intrinsic religiousness; (*b*) social support satisfaction; (*c*) stressfulness of the negative event; (*d*) positive reinterpretation and acceptance coping; and (*e*) number of recent positive life events. The SRGS was also positively related to residual change in optimism, positive affectivity, number of socially supportive others, and social support satisfaction, lending further support to the validity of this new scale. Results have implications for current theory on stress-related positive outcomes.

The major focus of stress and coping research has been on negative outcomes and adjustment and on identifying variables that mitigate the stress-distress relationship (Cohen, 1988). Although the reasoning be-

We thank Susan Folkman and two anonymous reviewers for helpful comments on an earlier version of this article. Requests for reprints and a copy of the Stress-Related Growth Scale should be sent to Lawrence H. Cohen, Department of Psychology, University of Delaware, Newark, DE 19716.

Journal of Personality 64:1, March 1996.

hind this approach is sound—people do experience distress as a result of negative life events—an exclusive focus on negative outcomes has precluded exploration of the possibility that, over time, people "grow" from these negative events.

Thirty years ago, Caplan (1964) stated that a fundamental assumption of crisis theory is the potential for growth from negative life experiences. However, it is only very recently that contemporary theorists have made stress-related growth a major component of their respective models of the stress and coping process. For example, Taylor's (1983) model of cognitive adaptation emphasizes the adaptive value of positively reinterpreting stressful experiences. Janoff-Bulman's (1992) model concerns the process by which tragedy shatters basic schemas, which then are rebuilt in modified form over time. Although survivors are worse off in some ways, there are some changes that can be positive, including the acquisition of wisdom and empathy. Antonovsky (1987) treats stress-related positive outcomes as common experiences that are influenced by an individual's sense of coherence, which includes the ability to make stressors comprehensible and meaningful. In Tedeschi, Calhoun, and Gross's (1993) view, personal growth is an inevitable outcome of the process of struggling with a severe life event. Finally, stress-related growth is included in Hobfoll's resource conservation model, and is especially relevant to individuals who start with a large reservoir of pre-event resources (Hobfoll & Lilly, 1993).

Previous research and clinical experience suggest that severe life events can indeed result in positive outcomes. The empirical literature has shown that individuals who experience such stressors as bereavement (e.g., Calhoun & Tedeschi, 1989–1990; Lehman et al., 1993; Park & Cohen, 1993), cancer (e.g., Collins, Taylor, & Skokan, 1990; Taylor, Wood, & Lichtman, 1983), divorce (e.g., Wallerstein, 1986), and heart attack (e.g., Affleck, Tennen, Croog, & Levine, 1987) report positive outcomes, including improved self-concept, coping skills, and social relationships.

Few of these studies, however, were specifically designed to assess perceived benefits, and most of their data were qualitative, or, if quantitative, relied on very crude scales. Specifically, measures of stress-related growth have included anecdotal reports during interviews (e.g., Calhoun & Tedeschi, 1989–1990), open-ended questions (e.g., Bulman & Wortman, 1977; Ebersole & Flores, 1989), or general or very brief questions regarding perceptions of positive outcomes (e.g., Collins et al., 1990; Lehman et al., 1993; Park & Cohen, 1993; Pearlin, Mul-

lan, Semple, & Skaff, 1990). Thus, little is known about stress-related positive outcomes, including their nature, frequency, and determinants.

The purposes of our project, then, were to develop a measure of stress-related growth and to study the variables associated with its occurrence. Our work was influenced directly by Schaefer and Moos (1992), who reviewed the literature on life crises and personal growth and outlined three major types of stress-related positive outcomes: (*a*) enhanced social resources (e.g., better relationships with friends); (*b*) enhanced personal resources (e.g., better self-concept); and (*c*) new or improved coping skills (e.g., better problem-solving ability). Although distinct, these three types of outcomes are seen as interrelated. For example, an increase in empathy might result in improved relationships with others. The assumption is that, over time, stress-related growth will be associated with changes in life philosophy and personality (broadly defined), changes in social relationships (including perhaps more appreciation of the value of close friends and family), and more adaptive coping behavior.

Schaefer and Moos (1992) also developed a conceptual model to explain the determinants of stress-related growth. The variables are, in sequence: (*a*) the respondent's personal characteristics (e.g., gender, temperament, personality traits) and characteristics of the respondent's environment (e.g., social support, living conditions); (*b*) characteristics of the negative life event (e.g., stressfulness, duration, controllability); and (*c*) coping behavior, including cognitive redefinition or positive reinterpretation of the event, and acceptance, assuming that there are aspects of the event that cannot be changed.

A critical issue in research on stress-related growth concerns the validity of self-reported positive outcomes. Should we believe crisis victims' reports of growth, or are these reports merely positive illusions that, although adaptive, are not grounded in concrete, measurable changes (Lehman et al., 1993; Taylor & Brown, 1988)? Lehman et al.'s results cast doubt on the validity of victims' reports of positive outcomes. Reports of positive outcomes by adults who had lost a child or spouse were not correlated with criterion measures of distress and happiness, and adults who reported positive outcomes were worse off than a comparison group without a history of comparable loss. However, it is important to note the types of positive outcomes reported by Lehman et al.'s respondents. These included increases in self-confidence, enjoyment of the present, acceptance of mortality, and an increased appreciation of life and one's family. It is unclear whether their criterion

measures of distress and happiness were sensitive to these types of event-related outcomes. Indeed, some studies indicate that the positive changes resulting from trauma are tinged with an existential awareness of mortality and vulnerability (Janoff-Bulman, 1992).

Lehman et al. (1993) suggest two methodological strategies to ensure the valid assessment of stress-related growth. One involves the use of measures of stress-related growth that have been validated by significant others' corroboration. This approach is similar to that used by life events researchers when responses to life stress scales are compared to reports by informants (Cohen, 1988). Use of a prospective design is a second strategy, where criteria (e.g., self-concept, social relationships) are assessed both pre-event and post-event, so that actual change can be calculated.

Overview of Research Project

Assessment of stress-related growth. The first major purpose of our research project was the development of the Stress-Related Growth Scale (SRGS). To our knowledge, this is the first attempt to quantify self-reported positive outcomes from a stressful event. Generation of items was influenced by Schaefer and Moos's (1992) conceptualization; items represented positive changes in personal resources, social resources, and coping skills. We conducted factor analyses to determine whether respective subscales should be computed, or, because of the hypothesized interrelatedness of the items, a total score should be computed instead.

Two validity studies were undertaken. In the first, informants completed a version of the SRGS, in which they reported the positive changes experienced by participants. We expected a significant relationship between participants' SRGS scores and those provided by informants. However, we did not expect this relationship to be strong because many of our items pertain to changes in life philosophy and self-perception, which cannot be easily corroborated by others.

The second validity analysis concerned the relationship between SRGS scores and pre-event to post-event change on relevant personality variables (e.g., optimism). This study included a prospective design in which some personality variables were assessed both before and after the experience of a stressful event. Therefore, we were able to compare self-reported growth resulting from this stressful event to "actual" changes that occurred pre-event to post-event.

Determinants of stress-related growth. The second major purpose of this project was the study of the determinants of stress-related growth. Schaefer and Moos's (1992) model influenced our selection of predictor variables. Pre-event variables included the following personality characteristics: intrinsic religiousness, dispositional optimism, and trait measures of negative and positive affect.

Previous research has shown that intrinsic religiousness is related to perceptions of stress-related growth (e.g., Park & Cohen, 1993; Park, Cohen, & Herb, 1990). Intrinsically religious individuals use religion as the framework within which they live their lives; individuals with this orientation find their primary motive in religion (Allport, 1966). It is thought that intrinsic religiousness promotes stress-related growth because it helps the individual find meaning in the crisis (Park & Cohen, 1992, 1993).

Some data also suggest that dispositional optimism predicts stress-related growth, especially in the context of medical problems such as arthritis and heart disease (e.g., Tennen, Affleck, Urrows, Higgins, & Mendola, 1992). Optimism might promote stress-related growth because of its relationship to adaptive coping strategies, such as problem-focused coping and seeking social support (Aspinwall & Taylor, 1992; Scheier et al., 1989; Scheier, Weintraub, & Carver, 1986).

Previous research has revealed the ubiquitous role of negative affectivity in the stress-distress relationship (e.g., Aspinwall & Taylor, 1992; Ormel & Wohlfarth, 1991; Watson & Pennebaker, 1989). Negative affectivity subsumes a variety of aversive mood states, including anger, fear, and nervousness (Watson & Clark, 1991). We expected a negative relationship between negative affectivity and stress-related growth. For exploratory purposes, we also included positive affectivity as a predictor. Positive affectivity reflects the extent to which a person feels enthusiastic, active, and alert (Watson & Clark, 1991).

Perceived social support, which can be construed as an environmental or personality characteristic (Lakey & Cassady, 1990), was another pre-event variable that was assessed in our prediction project. Previous research has demonstrated the important role of perceived social support as a life stress buffer (e.g., Cohen & Wills, 1985), although, to our knowledge, it has not been studied as a predictor of stress-related growth.

We also assessed a large number of characteristics of the stressful event, including its stressfulness at the time of occurrence and its controllability. The other major predictor variables were positive re-

interpretation coping and acceptance coping. As mentioned previously, these types of coping are fundamental to the growth process (Schaefer & Moos, 1992; Taylor, 1983).

Specific studies. The first study concerned the development of the SRGS with a college student population. Internal and test-retest reliabilities were computed, and factor analyses addressed the appropriateness of a total score versus subscale scores. The second study examined the validity of the scale; SRGS responses by college students were compared to reports by close friends and relatives. The third study examined the personality, environmental, event-related, and coping variables that influence college students' responses on the SRGS. This study also included an additional validity check: Scores on the SRGS were related to pre-event to post-event change on relevant personality variables.

Study 1

METHOD

Participants

Participants were 506 college students (344 women, 162 men) who participated in partial fulfillment of research participation requirements for an introductory psychology class. More than 90% were freshmen, and more than 90% were Caucasian.

Procedure and Measures

Participants described and evaluated the most "stressful/upsetting" event that they had experienced during the past 12 months. Participants used 7-point scales to rate this event on the dimensions of (*a*) stressfulness at the time of occurrence (initial stressfulness); (*b*) current stressfulness; and (*c*) amount of "personal growth" experienced as a result of the event.

Participants also responded to 82 "personal growth" items as they pertained to their past year's most stressful event. Each item was rated 0 (not at all), 1 (somewhat), or 2 (a great deal). Items reflected positive changes in social relationships (e.g., "I started a deep, meaningful relationship with another"; "I learned to respect others' feelings and beliefs"; "A prior relationship with another person became more meaningful"), personal resources, including life philosophy (e.g., "I rethought how I want to live my life"; "I learned to be open to new information and ideas"; "I learned that I want to have some impact on the world"), and coping skills (e.g., "I learned better ways to express

my feelings"; "I learned not to let hassles bother me the way they used to"; "I learned to work through problems and not just give up"). These items were generated by the authors based on the theoretical and empirical literature on stress-related positive change (e.g., Antonovsky, 1987; Collins et al., 1990; Schaefer & Moos, 1992; Taylor, 1983), as well as on clinical and personal experience. A previous study by our research group was also influential in the generation of items (Park & Cohen, 1993). In that study, 96 college students were interviewed about their coping with, and perceived growth from, the recent death of a close friend.

Participants also completed a 20-item short form of the Marlowe-Crowne Social Desirability Questionnaire (Strahan & Gerbasi, 1972) (current sample's Cronbach's alpha = .74), and, for exploratory purposes, the 15-item Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979) for the stressful event that they described. The IES has an Avoidance subscale and an Intrusion subscale, and also produces a total score (current sample's Cronbach alpha = .87). The IES assessed the degree to which participants continued to be affected by their past year's most stressful event. Horowitz et al. (1979) and Zilberg, Weiss, and Horowitz (1982) document the reliability and validity of the IES. Participants completed the measures in a random order.

Two weeks later, the 82 growth items were readministered to a random sample of 73 students (47 women, 26 men) from the original sample of 506. Their responses pertained to the stressful event that they had described previously.

RESULTS

Characteristics of Negative Event

The events that were described as the past year's most stressful experience involved (*a*) problems in a romantic relationship (e.g., "broke up with boyfriend") (19%); (*b*) academic performance problems (e.g., "failed a course") (15%); (*c*) moving away/starting college (14%); (*d*) death of a significant other (11%); (*e*) family-related event (e.g., "brother was arrested") (9%); (*f*) illness/accident (e.g., "was hurt in a car accident") (7%); (*g*) illness/accident experienced by another (e.g., "my best friend was seriously injured") (7%); (*h*) relationship problems with a friend (e.g., "had a falling out with my best friend") (5%); and (*i*) other events that were too infrequent for separate categorization (13%). On average, students' most negative event occurred 4.86 months ($SD = 3.36$) prior to data collection. These events were indeed stressful: Their mean initial stressfulness score was almost a 6 on a 7-point scale ($M = 5.91$, $SD = 1.14$). Their mean current stressfulness

score was 3.36 ($SD = 1.77$). On the one-item growth scale, participants reported that these events produced a considerable amount of personal growth ($M = 5.00$, $SD = 1.63$).

Development of the Stress-Related Growth Scale

From the original pool of 82 growth items, 32 were deleted because of skewed responses, and hereafter the remaining 50 items will be referred to as the Stress-Related Growth Scale. It should be noted that about half of these items reflect positive changes in personal resources, broadly defined, and the other half are about equally divided between positive changes in social relationships and positive changes in coping skills.

A series of factor analyses were conducted on the 50 SRGS items ($n = 506$). The first involved principal component analyses with an orthogonal varimax rotation. These analyses were conducted with no limitation on number of factors, and also when three factors (i.e., personal resources, social resources, and coping skills) were forced. This same strategy was used in the conduct of oblique factor analyses. In all of these analyses, most items loaded the highest on one general factor, and the factor structure was not consistent with hypotheses. Therefore, SRGS total scores were used in all subsequent analyses.

The mean SRGS total score was 50.68 ($SD = 9.62$, range = 4 to 100). Cronbach's alpha for the 50 SRGS items was .94. The test-retest r for the SRGS total score was .81.

Correlates of Stress-Related Growth

The SRGS was significantly correlated with the initial stressfulness of the past year's most negative event ($r = .18$, $p < .001$), the current stressfulness of the negative event ($r = .14$, $p < .001$), the one-item rating of event-related growth ($r = .46$, $p < .001$), and the IES total score ($r = .31$, $p < .001$). The SRGS was not significantly correlated with the recency of occurrence of the negative event ($r = .02$) or social desirability ($r = .00$).[1] These correlations were virtually identical when

1. Every item on the SRGS is worded in the positive (growth) direction. It is possible that the scale's internal reliability and correlations with other measures are inflated due to the effects of an acquiescent response set. To test this possibility, we constructed

men and women were examined separately. Women had higher SRGS scores than men ($M = 51.50$ vs. 45.73), $t(505) = 4.66$, $p < .001$. SRGS scores were compared for the seven most frequently reported types of negative events (i.e., romantic, academic, moving away, death, family event, own illness, and another's illness), but they did not differ.

DISCUSSION

To our knowledge, the SRGS is the first measure to explicitly and quantitatively assess stress-related growth. Item selection was influenced by the conceptual model of Schaefer and Moos (1992) and by the relevant theoretical and empirical literature. Specifically, SRGS items reflect positive changes in personal resources, social relationships, and coping skills.

Some items were excluded because of skewed responses, leaving a total of 50. The internal consistency of the 50-item SRGS was good (Cronbach's alpha = .94), and test-retest reliability over a 2-week period was acceptable ($r = .81$). Responses on the SRGS were not influenced by a social desirability or acquiescent response set (see Footnote 1).

One limitation of this study was the composition of the sample: All of the participants were college students, mostly Caucasian, first-year women. However, in another study, we administered the SRGS to parents of disabled children, and our data show that the items are

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a new version of the SRGS, in which every other item was worded in the negative direction (e.g., "I did not gain new knowledge about the world"). However, instead of a 0, 1, or 2 response format, we used a true/false format, because the former was too awkward and confusing for negative items. The sample was 101 college students (70 women, 31 men) in a general psychology class, who completed this new version of the SRGS for the past year's most negative event. These students did not participate in any other study involving the SRGS. They also completed the IES and rated their negative event on a number of dimensions, including those assessed in Study 1.

Internal reliability (Kuder-Richardson-20) of this version of the SRGS was .91. Its correlations with other variables were, for the most part, similar to those found in Study 1 (and Studies 2 and 3; see Tables 1 and 2). For example, the following correlations involving the new version of the SRGS were obtained: (*a*) IES, $r(100) = .18$, $p < .05$; (*b*) one-item growth rating, $r(100) = .46$, $p < .001$; (*c*) initial stressfulness, $r(100) = .03$, *ns*; and (*d*) current stressfulness, $r(100) = .11$, *ns*. Therefore, the findings obtained with the original (positively worded) version of the SRGS do not appear to be an artifact of acquiescent responding.

highly relevant to this noncollege sample and that the scale retains high internal reliability.[2]

Although we attempted to assess stress-related growth associated with negative events that occurred in a 1-year time frame, participants selected events that occurred, on average, only about 5 months prior to data collection. For a community sample with severe negative events, this time frame would have been too short to adequately assess the growth construct. For a college student sample with less traumatic events (e.g., romantic breakups, failed courses), this time frame is probably appropriate.

Although the Study 1 factor analyses did not support the computation of SRGS subscales, future research with other populations and time frames might demonstrate the value of such subscales. For example, Collins et al. (1990) showed that, for cancer victims, perceived benefits differed among the domains of daily activities, future plans and goals, views of the self, views of the world, and interpersonal relationships. On the other hand, Schaefer and Moos (1992) commented on the interrelatedness of stress-related positive outcomes, which is consistent with the results of our factor analyses.

It is interesting that the SRGS was positively correlated with participants' ratings of the negative event's initial stressfulness and current stressfulness, and with the IES, which is also an index of the event's current stressfulness, broadly defined. These findings, which need to be replicated, support Tedeschi et al.'s (1993) view that growth comes from the pain and struggle associated with a life crisis. The current study also found that women scored higher on the SRGS than men. We did not expect a gender difference on our measure, but there are opportunities in Studies 2 and 3 to replicate this finding.

2. A questionnaire with the original 82 SRGS items was mailed to 400 parents randomly chosen from the mailing list of the Parent Information Center of Delaware, an information and referral service for parents of children with disabilities. One hundred and twenty-three surveys (31%) were returned. Virtually all respondents were mothers, with a mean age of 39. On average, their children were 11 years old, and the most frequent diagnoses were (*a*) attention deficit/hyperactivity (19%); (*b*) autism (17%); (*c*) cerebral palsy (16%); (*d*) learning disability (14%); (*e*) Down's syndrome (9%); and (*f*) other retardation/developmental delay (8%).

Parents responded to each SRGS item in terms of whether they experienced the change "as a result of dealing with your child's disability." Virtually the same items that had skewed responses from the college students had skewed responses from these parents. The mean total score on the final 50-item version of the SRGS was 60.40 ($SD = 13.80$). Cronbach's alpha was .97.

The SRGS was also positively correlated with the one-item rating of event-related growth. Although this relationship is supportive of the scale's validity, a more formal test of validity is obviously required. With this in mind, the next study compared the SRGS responses of college students with those provided by their close friends and relatives who served as informants.

Study 2

METHOD

Participants

Participants were 160 college students (89 women, 71 men) who participated in partial fulfillment of research participation requirements for an introductory psychology class. None had participated in Study 1. More than 90% were freshmen, and more than 90% were Caucasian. Of these 160 students, 140 (88%; 77 women, 63 men) gave consent for a friend or family member to be contacted for a second part of the study. Seventy-three (52%; 46 women, 27 men) of the 140 friends and family members contacted agreed to participate. Of these, 38 (52%) were friends, 27 (37%) were mothers, 5 (7%) were fathers, and 3 (4%) were other relatives.

Procedure

Participants identified the most stressful event that had occurred during the past 12 months and rated this event on a number of dimensions. Participants completed the SRGS for the stressful event that they described. In addition, we asked students for their permission to contact a close friend or relative who had known the student during the past year. If they consented, students provided the name and address of their informant and also submitted a brief description of the event to be sent to their informant.

Participants' friends and relatives were mailed a packet which included a cover letter, a copy of the consent form signed by the student (which also included the student's description of the event), a version of the SRGS, and a postage-paid return envelope. Informants were asked to complete the SRGS, rating the types of changes that they had seen in the respective student as a result of the specific event described.

Measures

Stress-related growth. Participants completed the 50-item SRGS for the past year's most stressful event. For the current sample, Cronbach's alpha was .95.

Informants rated students on the 50 SRGS items in terms of how the latter had changed as a result of their stressful event. For the informant version of the SRGS, Cronbach's alpha was .93. In addition, informants indicated whether their perceptions were based on personal observation of the student, statements made by the student, or the report of a third party. They reported the length of their relationship with the student, as well as the closeness of that relationship (i.e., not close, close, or extremely close).

Event characteristics. Participants used 7-point rating scales to evaluate the past year's most stressful event on the dimensions of initial stressfulness, current stressfulness, perceived success in coping with this event and with a similar event from their more distant past, awareness that the event was going to occur, controllability of the event's occurrence, reversibility of the event's outcome, the degree to which the event has been resolved, and perceived growth from the event. Students also indicated how long ago the event occurred, the number of times that they had ever experienced a similar event, the number of people they know who had ever experienced a similar event, and the duration, in days, of the past year's most stressful event.

RESULTS

Characteristics of Negative Event

The events that were described as the past year's most stressful experience involved (*a*) problems in a romantic relationship (14%); (*b*) death of a significant other (14%); (*c*) academic performance problems (11%); (*d*) moving away/starting college (10%); (*e*) family-related event (8%), (*f*) illness or accident (7%); (*g*) illness/accident experienced by another (7%); (*h*) relationship problems with a friend (6%); (*i*) events experienced by another person (e.g., "my best friend had an abortion") (5%); and (*j*) other events that were too infrequent for separate categorization (17%).

The students' mean SRGS score was 52.87 (SD = 21.40, range = 8 to 98). On average, students' most negative event occurred 6.11 months (SD = 3.60) prior to data collection. The events' mean initial stressfulness score was almost a 6 on a 7-point scale (M = 5.84, SD = 1.29). For the events' current stressfulness, the mean was 3.22 (SD = 1.53). On the one-item growth scale, participants reported that these events produced a considerable amount of personal growth (M = 4.97, SD = 1.61). A one-way analysis of variance (ANOVA) was conducted to test for differences in SRGS scores as a function of

type of negative event (e.g., romantic problems, death of significant other), but the effect was nonsignificant.

Differences Related to Consent

Two-tailed t tests were conducted to compare students ($n = 140$) who gave their consent for friends or relatives to participate in the study with students ($n = 20$) who did not give consent. The dependent variables were the SRGS and all event-related ratings and characteristics. Only two comparisons were significant. Consenting students reported experiencing a larger number of similar negative events in the past ($M = 1.79$ vs. .53) and reported knowing a larger number of others who had experienced similar events ($M = 10.11$ vs. 2.50) ($p < .001$).

Differences Related to Informant Participation

Two-tailed t tests were conducted to compare the group of students ($n = 73$) whose friends or relatives completed the SRGS with the group ($n = 67$) whose friends or relatives declined to participate. The dependent measures were the SRGS and all event-related ratings and characteristics. Only two comparisons were significant. Students whose informants participated reported worse coping with past similar events ($M = 4.21$ vs. 4.69), and had longer-lasting negative events ($M = 30.64$ vs. 15.91 days) ($p < .05$).

Correlations

Correlates of SRGS. Table 1 presents the correlations between the SRGS and the ratings and characteristics of the past year's most negative event. This table includes correlations for all 160 subjects. With a criterion of $p < .01$ for statistical significance, the SRGS was positively related to the one-item rating of growth and participants' awareness and perceived controllability of the event's occurrence.

Table 1 also presents the correlations between scores on the informant version of the SRGS and the ratings and characteristics of participants' most negative event. None of these correlations were significant.

Participant-informant concordance on the SRGS. Students' mean scores on the SRGS did not differ from those provided by their friends and relatives, paired $t(67) = .05$, *ns*. There was a significant positive re-

Table 1
Study 2 Correlations between SRGS and Characteristics of Negative Event

Event characteristic	*r* with SRGS	
	Participant[a]	Informant[b]
Number of months since event occurred	.03	.18
Initial stressfulness	−.01	−.02
Current stressfulness	−.05	−.07
One-item growth rating	.51**	.14
Number of similar negative events	.02	.17
Success in coping with similar events	.03	.03
Success in coping with specific event	.14	.06
Number of people known with similar events	.07	.20
Awareness of event's occurrence	.27**	.08
Controllability of event's occurrence	.24*	−.07
Reversibility of event's outcome	.17	.03
Duration of negative event	.10	−.19
Resolution of negative event	.08	−.01

Note. SRGS = Stress-Related Growth Scale.
a. $n = 160$.
b. $n = 73$.
*$p < .01$
**$p < .001$.

lationship between students' SRGS scores and those provided by their informants, $r(72) = .21$, $p < .05$. When this analysis was restricted to informants who reported being "extremely close" to the students ($n = 57$), the correlation increased to $r(56) = .31$, $p < .05$.

We computed additional participant-informant correlations for some selected subsamples of participants (e.g., students whose informants reported direct observation of event-related changes), and for a selected subsample of SRGS items (those that represented observable change), and all *r*s were approximately .30 ($p < .05$). The participant-informant correlation was virtually identical when informants were friends versus parents (both *r*s = approximately .20, $p < .05$).

An intrapair agreement rate, corrected for chance by using the kappa statistic (Bartko & Carpenter, 1976; Cohen, 1960), was obtained for each of the 50 SRGS items for a total of 73 participant-informant pairs. In these analyses, SRGS responses were coded as 0 or 1 (no or some growth) versus 2 (a great deal of growth). Twelve of the SRGS items

achieved significant agreement, with kappas ranging from .26 to .40 ($p < .05$).

DISCUSSION

Study 2 examined the validity of the SRGS. College students provided the names and addresses of close friends and relatives who completed the SRGS on their behalf. Although there were very few differences associated with a participant's decision to supply the name and address of an informant or an informant's decision to participate in the study, there are a few issues related to the sample's representativeness that should be considered. First, only 52% of potential informants agreed to participate. It is possible that nonresponders had witnessed less growth on the part of their respective participants, or knew their respective participants less well than did responders. It should also be noted that participants whose friends or family participated reported worse coping with past similar negative events and had longer-lasting negative events than did participants whose potential informants did not participate. It is possible that informants' agreement to participate was related to knowledge of respective participants' prior difficulties with similar problems and to knowledge of the sheer duration of the recent event. However, it is unclear whether this knowledge would inflate or deflate actual concordance between participants and informants.

The correlation between SRGS scores provided by participants and their informants was significant, although low ($r = .21$). When only "extremely close" informants were included, this correlation increased to $r = .31$. These correlations are lower than those reported in life events–corroboration studies (e.g., Cohen, 1988), but this is not surprising. Although they differ, most life events checklists include many events that are major and public and for which corroboration from a significant other would be expected. Most of the SRGS items represent very private issues, including changes in life philosophy and coping skills, and even the more public issues would not necessarily be known by significant others during a brief time frame. Given these constraints, a significant correlation between the SRGS scores provided by participants and their informants is encouraging.

There are a number of interesting issues concerning participant-informant agreement that could not be addressed in Study 2. Although agreement did not differ between parents and friends, it is possible that growth from certain types of events would be differentially known by

these two sources. For example, parents might be more aware of reactions to family-related events, whereas friends might be more aware of reactions to romantic relationship events. In addition, certain types of positive outcomes might be differentially evident to these two sources. For example, parents might be more aware of changes in coping skills, whereas friends might be more aware of changes in social resources. In general, future research would profit from obtaining data from diverse corroboration sources, both to study source-related differences and to allow aggregation across multiple sources.

Most of the characteristics of the past year's most negative event were not correlated with the SRGS. The restricted range on such variables as the event's recency and severity probably contributed to these null findings. The Study 1 positive relationships between the SRGS and the negative event's initial stressfulness and current stressfulness were not replicated in Study 2, and it would seem that the earlier findings were due to chance.

The SRGS was positively correlated with participants' awareness of the negative event's occurrence and the perceived controllability of that occurrence. From these findings, it would appear that growth is more likely when an individual feels in control during the *development* of the crisis, that is, when it is anticipated and can be influenced by his or her actions. Of course, awareness and controllability are probably confounded with a host of event and possibly personality characteristics, which makes interpretation of these correlations difficult. In any case, the next study allows for a replication of these findings.

It is surprising that the SRGS was not correlated with participants' ratings of their success in coping with the recent event or previous similar events. It is possible that individuals can learn important lessons from crises, even if they are not and never have been especially successful in their coping efforts.

Obviously, additional research is needed to better understand the determinants of stress-related growth. These determinants are not restricted to event characteristics, but potentially include personality characteristics and the use of specific coping strategies to deal with the crisis (Schaefer & Moos, 1992). With this in mind, the next study was designed to examine the potential determinants of college students' scores on the SRGS. Predictor variables included measures of personality, social support, characteristics of the negative event, use of positive reinterpretation coping and acceptance coping, and number of recent life events. As mentioned previously, it was expected

that intrinsic religiousness (Park & Cohen, 1993), dispositional optimism (Tennen et al., 1992), low negative affectivity (Watson & Clark, 1991), perceived social support (Cohen & Wills, 1985), and use of positive reinterpretation and acceptance coping (Shaefer & Moos, 1992; Taylor, 1983) would contribute to stress-related growth. Study 3 also included an additional check on the validity of the SRGS; SRGS scores were related to pre-event to post-event change on relevant personality characteristics.

Study 3

METHOD

Participants

Participants were 256 students (173 women, 83 men) in an introductory psychology class. More than 90% were Caucasian, and most (74%) were in their first year of college. None had participated in the first two studies.

Procedure

Data were collected on two occasions, separated by 6 months. At Time 1, students in an introductory psychology class completed a battery of questionnaires in a random order. Students described two events, the most negative/stressful and the most positive, that had occurred during the past year, and they rated each on a number of dimensions. They also completed a separate SRGS for each event described. In other words, they completed the SRGS for their most negative event, and again for their most positive event.

Six months later (Time 2), an effort was made to contact, by phone, all participants to invite them to participate in a second group-testing session. Participants were paid $7 for participation at Time 2. Of the 256 Time 1 participants, 147 (57%) (109 women, 38 men) completed the Time 2 packet. Data from 5 (3 women, 2 men) of these students were later excluded because they failed to follow directions. Of the remaining Time 1 participants, 56 (21%) declined to participate, 44 (17%) could not be located, and 9 (4%) had transferred to another university. When only those participants who could be contacted or located are counted ($n = 203$), the response rate was 72%.

At Time 2, virtually all of the Time 1 measures were readministered, and a few new measures were added to the packet (e.g., coping, life stress). In addition, students described and rated the most stressful/negative life event that they had experienced since Time 1 (past 6 months) and completed the SRGS for that specific negative event. Questionnaires were completed in a random order.

Measures

Event-related growth. At both Time 1 and Time 2, students completed the 50-item SRGS. In the present study, Cronbach's alphas for the Time 1 positive event, Time 1 negative event, and Time 2 negative event were .96, .94, and .95, respectively.

Event characteristics. Students provided information about each event evaluated with the SRGS using the same event data form described in Study 2 (e.g., ratings of stressfulness, controllability).

Optimism. At both Time 1 and Time 2, dispositional optimism was measured with the widely used 8-item Life Orientation Test (LOT; Scheier & Carver, 1985). Previous research has supported the reliability and validity of the LOT (Mroczek, Spiro, Aldwin, Ozer, & Bosse, 1993; Scheier & Carver, 1987). In the present study, Cronbach's alphas were .83 and .87 at Time 1 and Time 2, respectively.

Intrinsic religiousness. At both Time 1 and Time 2, Gorsuch and McPherson's (1989) 8-item scale was used to assess intrinsic religiousness (IR). Individuals who score high on this measure use religion as a framework for their lives (Gorsuch & McPherson, 1989). A sample item is "My whole approach to life is based on my religion." Previous research has supported the scale's reliability and face validity (Gorsuch & McPherson, 1989). In the present study, Cronbach's alphas were .78 and .80 at Time 1 and Time 2, respectively.

Perceived social support. The Social Support Questionnaire–Short Form (SSQ; Sarason, Levine, Basham, & Sarason, 1983) was used to assess perceived social support at both Time 1 and Time 2. Students listed up to nine individuals to whom they can turn for support in each of six different situations. Students also used 6-point scales to rate their satisfaction with the support available in each of the six situations. The SSQ yields both a *number* score (perceived availability of support) and a *satisfaction* score (perceived satisfaction with available support) that represent respective averages for the six situations. Sarason et al. documented the reliability and validity of the SSQ.

Dispositional affectivity. At both Time 1 and Time 2, dispositional affectivity was assessed with the Positive and Negative Affect Schedule–Expanded Form (PANAS-X; Watson & Clark, 1991). Participants used 5-point scales to rate how often, on average, they experience each of 20 emotions. The measure produces separate scores for the general dimensions of positive affect and negative affect. Watson and Clark documented the strong psychometric characteristics of the PANAS-X as a measure of trait affect. In the present study, the Time 1

and Time 2 Cronbach's alphas for positive affect were .85 and .84, respectively. Cronbach's alphas for negative affect were .85 and .83, respectively.

Life events. The number of life events that students experienced between Time 1 and Time 2 (past 6 months) was assessed at Time 2 with the 111-item College Student Life Events Schedule (CSLES; Sandler & Lakey, 1982). Students checked those life events that they had experienced since Time 1, and indicated each event's impact (positive, negative, or neutral) at the time of occurrence. In the present study, separate scores were computed for number of negative events and number of positive events. The CSLES is a widely used measure of life events for college students and is significantly correlated with other life events scales (Sandler & Lakey, 1982).

Coping. At Time 2 only, students completed the COPE scale (Carver, Scheier, & Weintraub, 1989) to indicate how they coped with the most stressful event that occurred during the Time 1 to Time 2 interval. The 60-item COPE has 15 subscales, including one for Positive Reinterpretation and one for Acceptance. The other subscales are Active Coping, Planning, Suppression of Competing Activities, Restraint Coping, Seeking Instrumental Social Support, Seeking Emotional Social Support, Turning to Religion, Focus on/Venting of Emotions, Denial, Behavioral Disengagement, Mental Disengagement, Alcohol/Drug Use, and Use of Humor. Students indicated how much (ranging from "not at all" to "a lot") they used each item to cope with their most stressful event since Time 1. Carver et al. have documented the strong psychometric properties of the COPE. With the exception of Mental Disengagement (.40), all of the COPE subscales had Cronbach's alphas between .63 and .93 in the current study.

The alpha for Positive Reinterpretation was .75. This subscale has four items: (*a*) "I look for something good in what is happening"; (*b*) "I try to see it in a different light, to make it seem more positive"; (*c*) "I learn something from the experience"; and (*d*) "I try to grow as a person as a result of the experience."

The alpha for Acceptance was .78. This subscale has four items: (*a*) "I learn to live with it"; (*b*) "I accept that this has happened and that it can't be changed"; (*c*) "I get used to the idea that it happened"; and (*d*) "I accept the reality of the fact that it happened."

Event impact. At Time 2, students completed the 15-item IES for the most stressful event that had occurred since Time 1 (see Measures section of Study 1). In the present study, Cronbach's alpha for the IES total score was .88.

It is important to note that the same negative event served as the reference for the Time 2 SRGS, the COPE, and the IES.

RESULTS

Characteristics of Negative Event

At Time 1, the reported negative events involved (*a*) problems in romantic relationships (19%); (*b*) death of a significant other (17%); (*c*) illness or accident (10%); (*d*) family-related problem (9%); (*e*) moving away/starting college (7%); (*f*) illness or accident experienced by another (7%); (*g*) academic performance problems (6%); (*h*) relationship problems with friends (4%); (*i*) events experienced by another (3%); and (*j*) events that were too infrequent for separate categorization (18%).

At Time 2, the reported negative events involved (*a*) problems in romantic relationships (23%); (*b*) academic performance problems (19%); (*c*) family-related problem (11%); (*d*) death of a significant other (9%); (*e*) illness or accident experienced by another (8%); (*f*) events experienced by another (7%); (*g*) relationship problems with friends (4%); (*h*) illness or accident (4%); (*i*) moving away/starting college (1%); and (*j*) events that were too infrequent for separate categorization (14%).

At Time 1, the mean SRGS score for negative events was 53.08 ($SD = 19.31$, range = 6 to 92), and at Time 2 it was 54.57 ($SD = 20.95$, range = 6 to 96). The negative events at Time 1 and Time 2 were very stressful when they occurred (Ms = 5.99 and 5.79, respectively). At Time 1, the negative event had occurred approximately 6 months ($M = 5.83$; $SD = 3.97$) prior to data collection, whereas at Time 2, the interval was approximately 3 months ($M = 3.28$; $SD = 1.79$). At Time 1, the mean for the negative event's current stressfulness was 3.92 ($SD = 1.35$), and at Time 2, this mean was 4.03 ($SD = 1.31$). At both times, participants reported that the respective negative events had produced considerable personal growth (Ms = 4.81 and 4.88, respectively). At both Time 1 and Time 2, separate one-way ANOVAs were conducted to test for differences in SRGS scores as a function of type of negative event (e.g., romantic problems, death of significant other). In both cases, the effect was nonsignificant.

Differences Related to Time 2 Participation

Two-tailed *t* tests were computed to compare students who participated at Time 1 only ($n = 109$) with those who participated at both Time 1 and Time 2 ($n = 142$). The dependent measures were all Time 1 measures

(i.e., demographics, event characteristics and ratings, and scores on the LOT, IR, PANAS-X, SSQ, and SRGS). Only four comparisons were significant. The group of students who participated at both times had a higher proportion of women (75%) than the group of students who participated at Time 1 only (59%) ($p < .01$). Time 2 participants were younger than the students who participated at Time 1 only ($M = 18.70$ vs. 20.16 years) ($p < .001$), and, consequently, less advanced in academic years ($M = 1.21$ vs. 1.59) ($p < .001$). In addition, students who participated at both times reported more Time 1 stress (resulting from the most negative event reported at Time 1) than did students who participated at Time 1 only ($M = 3.92$ vs. 3.50) ($p < .05$).

Gender Differences

Two-tailed t tests were conducted to compare men and women on all Time 1 and Time 2 variables. The only significant difference at Time 1 was on SRGS scores for negative events, with women scoring higher than men ($M = 54.88$ vs. 45.58), $t(136) = 2.53, p < .05$.

At Time 2, women scored higher on the number and satisfaction scores for social support, and on the COPE scales of Seeking Emotional Social Support, Focus On/Venting of Emotions, and Denial, $ts(139) > 2.29, ps < .05$.

Correlational Analyses[3]

Time 1 and Time 2 correlations with the SRGS are presented in Table 2. Correlations that were significant at $p < .01$ or beyond are reported in the text and highlighted in the table. Correlations are reported for the sample of 142 students who participated at both Time 1 and Time 2.

At both Time 1 and Time 2, the SRGS was positively related to the one-item rating of event-related growth, intrinsic religiousness, positive affectivity, and social support satisfaction. At Time 2 only, the SRGS was positively related to optimism and number of social support sources. There were some additional correlations with the Time 2 SRGS that involved measures that were administered at Time 2 only. Specifi-

3. Factor analyses were performed on the Time 1 SRGS scores ($n = 256$). Three factors were forced in both an orthogonal and oblique analysis. As in Study 1, most items loaded the highest on one general factor, and the pattern of those items that loaded the highest on the other two factors was not that similar to that found in Study 1.

Table 2
Study 3 Correlates of SRGS

Variable	Time 1 *rs*	Time 2 *rs*
Number of months since occurrence	.16	**.21***
Initial stressfulness	.15	.14
Current stressfulness	.02	.08
One-item growth rating	**.37****	**.48****
Number of similar negative events	.03	−.11
Success coping with similar events	.04	.11
Success coping with specific event	−.11	.12
Number of people known with similar events	−.01	.03
Awareness of event's occurrence	.17	.02
Controllability of event's occurrence	−.03	−.05
Reversibility of event's outcome	−.03	−.01
Duration of negative event	.16	.08
Resolution of negative event	.07	.06
Optimism (LOT)	.18	**.27***
Intrinsic religiousness	**.23***	**.20***
Positive affectivity	**.27****	**.41****
Negative affectivity	−.06	−.12
Social support–number	.09	**.29****
Social support–satisfaction	**.23***	**.35****
Impact of Event (IES)	NA	**.21***
Number of positive events	NA	**.42****
Number of negative events	NA	−.04
Active coping	NA	.14
Planning coping	NA	.16
Suppression coping	NA	.12
Restraint coping	NA	.15
Instrumental social support coping	NA	.16
Emotional social support coping	NA	**.23***
Positive reinterpretation coping	NA	**.55****
Acceptance coping	NA	**.36****
Religious coping	NA	**.32****
Venting emotions coping	NA	.15
Denial coping	NA	.17
Behavioral disengagement coping	NA	−.03
Mental disengagement coping	NA	.15
Alcohol/drug use coping	NA	−.08
Humor coping	NA	−.01

Note. SRGS = Stress-Related Growth Scale; LOT = Life Orientation Test; IES = Impact of Event Scale; NA = not administered. Correlations significant at $p < .01$ or beyond are shown in bold.
*$p < .01$
**$p < .001$.

cally, the Time 2 SRGS was positively related to the IES, the number of positive life events, and the coping strategies of emotional social support, acceptance, positive reinterpretation, and religious coping.

The Time 1 correlation between the SRGS for negative events and the SRGS for positive events was .60 ($p < .001$). The Time 1–Time 2 correlation for the SRGS for negative events was .59 ($p < .001$). The correlation between the SRGS for Time 1 positive events and Time 2 negative events was .53 ($p < .001$).

Growth from Negative Versus Positive Events

A two-tailed paired t test was computed to assess the difference in Time 1 SRGS scores for negative versus positive life events. Participants ($n = 226$) were all Time 1 students who completed both versions of the SRGS. SRGS scores were higher for positive events ($M = 59.82$) than for negative events ($M = 53.91$), $t(225) = 4.79, p < .001$.

Prediction of Time 2 Stress-Related Growth

A multiple regression analysis was conducted in which six blocks of variables were entered in sequence as predictors of Time 2 SRGS scores (growth in response to a negative event). The blocks were as follows: (*a*) gender; (*b*) Time 1 personality variables (specifically, intrinsic religiousness, PANAS-X negative affect and positive affect, social support satisfaction, and optimism); (*c*) characteristics of the Time 2 negative event, specifically its stressfulness at the time of occurrence, how long ago it occurred, and the controllability of its occurrence; (*d*) Time 2 positive reinterpretation and acceptance scores from the COPE; (*e*) the degree to which the negative event was resolved at the time of data collection, based on participants' resolution ratings on a 7-point scale; and (*f*) Time 2 number of negative life events and number of positive life events (past 6 months).

This order of predictor blocks is based in part on Schaefer and Moos's (1992) model of stress-related growth. Specifically, gender and then personality and social support variables precede the occurrence of an event, which can vary on stressfulness, recency, and controllability. Coping is next. Event resolution was added to determine if stress-related growth varies as a function of the "stage" of a negative event. We concluded with the contextual predictor of recent negative and positive life events. We could not include every characteristic of the negative event, and so restricted that block to three characteris-

tics that seem self-evidently relevant to stress-related growth (initial stressfulness, recency of occurrence, and controllability). Similarly, we could not include every coping strategy, and therefore we limited this block to two strategies, positive reinterpretation and acceptance, which have the strongest theoretical link to stress-related growth (Schaefer & Moos, 1992; Taylor, 1983), and which also correlated the highest with the Time 2 SRGS (see Table 2).

When entered in the aforementioned order, three blocks accounted for a significant increase in explained variance: (*a*) personality, F change = 5.61, $p < .001$ (R^2 change = .19); (*b*) coping, F change = 27.08, $p < .001$ (R^2 change = .25); and (*c*) life events, F change = 5.38, $p < .01$ (R^2 change = .05). An analysis of the individual predictors in the personality block revealed significant effects for intrinsic religiousness ($b = .26, p < .01$) and social support satisfaction ($b = .23, p < .01$). Within the coping block, both acceptance ($b = .19$, $p < .05$) and positive reinterpretation ($b = .42, p < .001$) were significant predictors. Within the life events block, number of positive events was a significant predictor ($b = .22, p < .01$).

After all predictors were entered into the equation, the model as a whole was highly significant in the prediction of Time 2 SRGS scores, $F(14, 113) = 8.55, p < .001$ ($R^2 = .51$). In the full model, when all predictors were tested simultaneously, intrinsic religiousness ($b = .16$, $p < .05$, R^2 change = .03), social support satisfaction ($b = .14$, $p < .05$, R^2 change = .02), positive reinterpretation ($b = .39, p < .001$, R^2 change = .11), acceptance ($b = .19$, $p < .01$, R^2 change = .03), and number of positive events ($b = .22$, $p < .01$, R^2 change = .04) remained significant. One additional predictor emerged as significant in the full model: the negative event's stressfulness at the time of occurrence ($b = .16, p < .05$, R^2 change = .02).

Stress-Related Growth as Predictor of Time 1 to Time 2 Personality Change

Separate hierarchical regression analyses were conducted to assess the relationship between Time 2 SRGS scores and Time 1 to Time 2 change in intrinsic religiousness, optimism, negative affectivity, positive affectivity, and social support–number and social support–satisfaction. In each regression, the criterion was a Time 2 personality or social support variable. The first-step predictor was the Time 1 score on this variable, followed by gender and Time 2 stress-related growth.

These regression analyses revealed that Time 2 SRGS scores were significantly ($p < .05$) related to *increases* in optimism (F change = 5.09, R^2 change = .03), positive affectivity (F change = 13.78, R^2 change = .05), satisfaction with social support (F change = 6.52, R^2 change = .03), and number of social support sources (F change = 7.59, R^2 change = .04). As expected, the initial (Time 1) scores on each criterion were highly significant ($p < .001$). The R^2 for each initial measure was (*a*) optimism = .56; (*b*) positive affectivity = .47; (*c*) social support satisfaction = .28; and (*d*) number of social support sources = .23.

DISCUSSION

Study 3 examined the determinants of stress-related growth. Of the Time 1 participants who could be located, 72% agreed to participate at Time 2. Although participants were reimbursed for participation at Time 2, they were no longer students in a general psychology class at this time, and therefore no longer active members of the department's "subject pool." This accounts, in part, for the Time 1 to Time 2 attrition.

Those who participated at Time 2 and those who did not were compared on 25 Time 1 variables, and, aside from a few demographic variables, only one variable distinguished the two groups: Those who participated at both times reported more Time 1 current stress (resulting from the most negative event reported at Time 1) than those who participated at Time 1 only. This difference is probably a chance finding, and it seems inappropriate to attempt an interpretation. In general, it seems safe to conclude that there were no meaningful differences associated with Time 2 participation.

At Time 1, women had higher SRGS scores than men. This same gender difference was obtained in Study 1. This pattern is consistent with that found in some other studies that have addressed the relationship between gender and stress-related positive outcomes (e.g., Brooks & Matson, 1982; Lehman et al., 1993; Wallerstein, 1986). Women's higher scores on the SRGS might be due to differences in coping. For example, L'Abate (1992) describes how women are socialized to experience and acknowledge their feelings. Perhaps this inward focus facilitates their stress-related growth, or, alternately, their recognition of changes that were achieved.

Correlates of the SRGS

At both Time 1 and Time 2, the SRGS was positively related to the one-item rating of growth, intrinsic religiousness, positive affectivity, and social support satisfaction. The relationship with the growth rating is consistent with that found in Studies 1 and 2, and lends some support to the validity of the SRGS. The relationships involving intrinsic religiousness and social support satisfaction were expected (e.g., Cohen & Wills, 1985; Park & Cohen, 1993) and suggest the importance of these variables in the development of stress-related growth.

As noted previously, intrinsic religiousness reflects the degree to which religion serves as an individual's framework of meaning. The extent to which an individual has a salient, coherent belief system from which to draw strength, and through which to make sense of and interpret experiences, would be expected to influence that individual's ability to find positive meaning in a negative experience (Antonovsky, 1987; Krauss & Seltzer, 1993; McIntosh, Silver, & Wortman, 1993).

The relationship between stress-related growth and satisfaction with social support can be explained in several ways. For example, social support satisfaction might be an indicator of the fit between an individual's particular coping needs and his or her available resources (Folkman, 1992). On the other hand, an individual might ask for and receive adequate support to help deal with a stressful event. Satisfied by this support, the individual will be encouraged to view herself/himself as worthwhile and capable through the positive feedback offered by those perceived by the individual to care.

Positive affectivity was included for exploratory purposes, but it, and not negative affectivity, was related to the SRGS. This would suggest that a disposition toward a positive mood promotes the development of stress-related growth.

Virtually none of the event characteristics were significantly related to the SRGS. The Study 2 relationships involving awareness of the event's occurrence and the perceived controllability of that occurrence were not significant in Study 3. Obviously, these relationships are not consistent, and it is unclear why they were found in Study 2 but not in this study. Perhaps with a longer time frame and more variability on event characteristics, some event variables would be shown to consistently influence stress-related growth.

At Time 2, the SRGS was positively related to the coping strategies of positive reinterpretation, acceptance, religious coping, and emotional

social support. The last relationship is consistent with that involving social support satisfaction, and further suggests the importance of social support processes in the development of stress-related growth. The relationship with religious coping is consistent with that involving intrinsic religiousness.

Positive reinterpretation coping was highly correlated with stress-related growth, and for an obvious reason: This coping strategy is an attempt to achieve this very outcome. Obviously, making attempts to "learn something from the experience" and to "grow as a person as a result of the experience" enhances the likelihood that one will report having done so. The complicated problem of drawing conceptual and practical distinctions between positive reinterpretation coping and stress-related growth will be considered in the General Discussion section.

Several other studies have found acceptance coping to be related to positive changes following stressful situations (e.g., Brooks & Matson, 1982; Schussler, 1992). For example, Brooks and Matson found that, in a sample of individuals with multiple sclerosis, acceptance coping was associated with improved self-confidence and enhanced relationships with others. The authors theorized that acceptance coping allowed the individuals to integrate the difficult circumstance (in this case, a disease) with other aspects of their life; such integration eventually paves the way for enhanced functioning and growth.

At Time 2, the SRGS was strongly related to the number of recent positive life events. Previous research has shown that positive life events can buffer the deleterious effects of negative life events (e.g., Cohen, Burt, & Bjorck, 1987; Cohen, McGowan, Fooskas, & Rose, 1984). In other words, for those who experience a large number of recent negative events, distress will be lower for those who also experience a large number of recent positive events. The current finding suggests that a very stressful event can produce growth if it is also coupled with the occurrence of several positive events. Of course, it is also possible that participants' responses on the SRGS and the positive events that they endorsed on the CSLES represent the same experiences. In other words, if a participant's friendships became more meaningful because of a stressful event, this consequence would be assessed by the SRGS and perhaps would also be reported as a positive event on the CSLES.

Similarly to Study 1, the current study found a positive relationship between the SRGS and the IES, which assesses current distress from a negative event in terms of a respondent's avoidant and intru-

sive experiences. But the IES is more than just an index of the current distress caused by a negative event. It is also thought to reflect the current cognitive *processing* of a negative event, including attempts at "meaning-making" (Horowitz, 1991). The positive relationship between the SRGS and the IES supports Tedeschi et al.'s (1993) view that growth is more likely from an event that is painful and for which resolution is challenging and difficult. Specifically, it is their position that it is the *struggle* to cope that is the source of potential benefit, rather than the specific event that produced the crisis. The correlation between the SRGS and the IES also suggests that stress-related growth can occur concurrent with adaptational processes, that is, while an individual is still struggling with feelings of distress. In other words, growth does not necessarily depend on abatement of distress or the resolution of the crisis.

It is interesting to note that SRGS scores for negative events correlated .59 from Time 1 to Time 2, and that the separate Time 1 SRGS scores for negative and positive events correlated .60. These correlations suggest that the SRGS is tapping, in part, an individual difference variable that reflects the disposition to view stress (and positive experiences) as an opportunity for growth. Similarly, McCrae (1989) found that the coping strategy of "drawing strength from adversity" was highly stable ($r = .47$) over a 7-year period.

Prediction of the SRGS

In the prediction of the SRGS, the predictors included personality and social support variables, which were assessed pre-event, and characteristics of the negative event, use of positive reinterpretation and acceptance coping, resolution of the negative event, and recent positive and negative life events. The model as a whole was significant ($R^2 = .51$), and several predictors within it were significantly related to the SRGS, specifically, intrinsic religiousness, social support satisfaction, the event's stressfulness at the time of occurrence, positive reinterpretation and acceptance coping, and number of recent positive life events.

The roles of each of the aforementioned significant predictors have already been discussed, with the exception of the role of the negative event's stressfulness at the time of occurrence. This last finding suggests that an event that causes more initial distress allows an individual

more opportunities to struggle to work through and find meaning in the event. This could be due to the event's greater disruption of an individual's schemas (Janoff-Bulman, 1992). The process of rebuilding one's worldviews might be reflected in the IES scores, which were positively correlated with the SRGS. Such processing can take time.

Findings from the Validity Analyses

The validity of the SRGS was supported by the regression findings showing that Time 2 SRGS scores were a predictor of Time 2 residual (positive) change in optimism, positive affectivity, satisfaction with social support, and number of social support sources. In a related study, Holahan and Moos (1990) found that community adults who became less depressed over a 1-year period, despite the occurrence of many life stressors, demonstrated positive changes in family support and self-confidence.

It should be noted, however, that in the aforementioned regression analyses, the SRGS accounted for a small amount of the variance ($R^2 < .06$) in the Time 2 criterion scores. It is possible that participants' mood at the Time 2 testing session influenced their SRGS responses as well as their responses on the personality and social support measures, and that this "third variable" influenced the relationships obtained (Cohen, Towbes, & Flocco, 1988). Future research on the validity of the SRGS should attempt to control for the effects of concurrent mood.

It is interesting and logical that SRGS scores were higher for positive life events than negative life events. Positive changes in, for example, self-concept and social relationships are expected after an extremely positive life experience, whereas they may or may not occur after an extremely negative experience, depending on a host of factors previously outlined (Schaefer & Moos, 1992). In an additional study, we administered the SRGS to a new random sample of 98 undergraduates (again mostly first-year Caucasian women), with the instructions to respond to the items as they pertained to the past 12 months. These data were collected at the same time as the Time 1 group testing (late fall semester). This was an attempt to study personal growth that stemmed from *maturation*, not from the experience of a specific life event. The mean SRGS score for this sample was 64.22, which was higher ($p < .05$) than that for the most positive event, and for the most negative event, reported by participants in Study 3. This too makes sense: One would

expect more growth in college students during a 12-month period than from one positive event, which occurred, on average, 5.67 months prior to data collection.

GENERAL DISCUSSION

The current research represents the first attempt to quantify stress-related growth with a reliable and valid measure. The SRGS has adequate test-retest reliability, and its internal reliability, for both college students and parents of disabled children (see Footnote 2), is approximately .95. There was some support for the scale's validity. There was a significant relationship between the SRGS scores obtained by college students and those provided by their informants. The SRGS was significantly related to positive change in optimism, positive affectivity, satisfaction with social support, and number of social support sources.

The results of Study 3 are consistent with Schaefer and Moos's (1992) model of stress-related growth. Significant predictors of the SRGS were intrinsic religiousness, social support satisfaction, the initial stressfulness of the negative event, the coping strategies of positive reinterpretation and acceptance, and number of recent positive life events.

These findings must be viewed in light of some methodological limitations. Future research should include community adults and a longer time frame in order to assess reactions to more severe events and to allow adequate time for stress-related growth to occur. It is probable that a sampling of more varied stressors would provide a more powerful test of event-related determinants (e.g., controllability, novelty). Previous research (e.g., Collins et al., 1990) has categorized stress-related positive outcomes (e.g., daily activities, life philosophy), but no study to date has empirically tested the psychometric validity of these domain-based categories. Our research with college students and parents of disabled children suggests that self-reported positive outcomes in the domains of personal resources, social resources, and coping skills are highly interrelated. Future research with more varied populations and longer time frames should further explore the factor structure of the SRGS.

A limitation of Study 3 is the potential confound between reports of positive reinterpretation coping and reports of stress-related growth on the SRGS. An examination of the items on the two scales reveals some overlap, and it is possible that some SRGS responses reflect, in part, attempts at positive reinterpretation coping rather than event-related

positive outcomes. Indeed, these two measures were very highly correlated ($r = .55$). However, we believe that, at a conceptual level, there is a clear distinction between attempts to find meaning (coping) and actual changes within an individual that can be veridically reported. But we also acknowledge that disentangling these two constructs is extremely difficult (Affleck & Tennen, 1993).

With this in mind, in all three studies, we conducted some analyses on only those participants whose negative events were at least "somewhat resolved," in an effort to identify subsamples who would be less likely to still be coping with their crises. (There were not enough participants whose negative events were "completely resolved.") As it turned out, the results from these analyses were very similar to those conducted on the full samples reported in this article. Furthermore, in the Study 3 regression analysis, the resolution status of the negative event proved to be a nonsignificant predictor of stress-related growth. In any case, the identification of these subsamples was based on the assumptions that stress-related growth is subsequent to, and not concurrent with, adaptational processes, and that positive reinterpretation coping is more likely in the early compared to the late stages of a crisis. However, there is reason to believe that stress-related growth can occur soon after a trauma occurs, even while individuals are experiencing acute distress (Collins et al., 1990; Janoff-Bulman, 1992; Lehman et al., 1993). The significant relationship between the SRGS and the IES, found in both Study 1 and Study 3, supports this view. In addition, the timing of cognitive coping seemingly depends on a host of factors that are not well understood at this time.[4] Many more studies are needed to clarify these issues. It seems likely that for some stressors and some individuals, certain positive changes can occur even in the early stages of a trauma, whereas in other cases, a trauma needs to be resolved before some types of positive changes can emerge.

Is stress-related growth real or merely an adaptive illusion (Taylor & Brown, 1988)? The validity data from Studies 2 and 3 support an "objective reality" to SRGS responses, but these findings are merely suggestive. More studies are needed before this issue can be settled (Lehman et al., 1993).

Finally, it is important to view stress-related growth from a developmental perspective. As noted previously, it is possible that the tendency to find or create positive meaning in stressful situations is, to some

4. We thank an anonymous reviewer for helpful comments on these issues.

extent, a stable characteristic of the individual. This leads to the question, Do some individuals consistently grow from stressful experiences? Could this pattern of growth result in wisdom and maturity? Although most relevant research shows few personality changes beyond age 30 (McCrae & Costa, 1990), few studies have assessed constructs related to wisdom and maturity, although some adult studies suggest the development of more effective coping styles with age (Aldwin, 1991; Krauss & Seltzer, 1993). Future research on how stress-related growth occurs throughout the life span will provide a more complete picture of this process.

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