STRESS-RELATED GROWTH IN DIVISION I ATHLETES:

A MIXED METHODS INVESTIGATION

by

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SUPERVISORY COMMITTEE APPROVAL

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To the Graduate Council of the University of Utah:

I have read the dissertation of Nicholas Adam Galli in its final form and have found that (1) its format, citations, and bibliographic style are consistent and acceptable; (2) its illustrative materials including figures, tables, and charts are in place; and (3) the final manuscript is satisfactory to the supervisory committee and is ready for submission to The Graduate School.

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ABSTRACT

Sport psychology researchers have long been interested in the antecedents and consequences of stress in athletes. However, despite anecdotal, research, and conceptual evidence for the positive benefits of stress in athletes, no studies have been undertaken that systematically explore the phenomenon of stress-related growth (SRG) in the context of competitive sport. The purpose of this study was to gain an understanding of (SRG) in Division I intercollegiate athletes. An explanatory mixed methods design was employed. After an initial quantitative phase, qualitative data served as a follow-up to obtain more in-depth responses about SRG in Division I athletes. Less than half (43%) of the athletes reported a moderate to large degree of growth in response to their most difficult sport stressor in the past 3 years. The results of the regression analyses revealed that several demographic, stressor-related, and cognitive appraisal variables contributed significantly to the prediction of SRG. Most notably, being female, feeling more stress currently, and perceiving more control over the occurrence of the stressor all predicted more growth. Interviews with 11 athletes from the larger sample resulted in the emergence of four dimensions: (a) Personal and Sociocultural Context, (b) Disruption, (c) Social Support, and (d) Positive Psychosocial Outcomes. Based on these four dimensions, a conceptual model of SRG was developed. Athletes' struggles and attempts to work through their most difficult sport stressor led them to perceive personal growth in the form of a new life philosophy, self changes, and interpersonal changes. Social support was critical in

facilitating athletes' attempts to work through and make meaning from their stressor. The entire SRG process was framed by athletes' life context, including personal characteristics and sociocultural conditions. Researchers who are interested in conducting future studies on SRG in sport should consider employing prospective designs, testing plausible rival hypotheses for growth, and examining SRG in at-risk groups of athletes. Coaches can facilitate growth in their athletes by providing them with emotional support and encouragement. Practitioners should be aware of the potential for growth in their clients, and guide athletes as they attempt to make sense of their struggles.

To my Grandfather, who helped me find my love for sports.

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CHAPTER 1

INTRODUCTION

"I think it makes me stronger. I seriously feel like what doesn't kill me, well it's gotta make me stronger in some way" (Division I track athlete, personal communication, April 12, 2005). This statement illustrates the way in which many individuals view the outcomes of stressful life experiences. Studies of survivors of horrific circumstances and events such as HIV/AIDS (Milam, 2006), cancer (Thornton & Perez, 2006), the Holocaust (Lev-Wiesel & Amir, 2003), war (Powell, Rosner, Butullo, Tedeschi, & Calhoun, 2003), and the terrorist attacks of 9/11 (Butler et al., 2005) show that many individuals not only survive, but acquire positive attributes as a result of adversity. Although not necessarily as traumatic as the events just listed, the high demands of competitive sport may lead athletes to face adversity throughout their career (e.g., Cresswell & Eklund, 2007; Giacobbi, Foore, & Weinberg, 2004; Giacobbi et al., 2004; Gould, Udry, Bridges, & Beck, 1997). Athletes describe learning valuable lessons as a result of setbacks, obstacles, and adversity in sport (Layden, 2007; Naber, 1999). The study of positive change from stress and adversity has been a topic of increasing interest for researchers in general psychology over the past 10 to 15 years (Park & Helgeson, 2006).

Stress-Related Growth

Stress-related growth (SRG), also referred to as posttraumatic growth, benefit finding, and thriving, is defined as positive changes that occur in individuals in the aftermath of stressful life experiences (Park, Cohen, & Murch, 1996). The concept of growth through adversity has roots in the philosophy and writings of ancient Hebrews, Greeks, and Christians (Tedeschi & Calhoun, 1995). More recently, clinicians have recognized the way that life crises may contribute to positive changes (Antonovsky, 1987; Caplan, 1964; Dohrenwend, 1978; Frankl, 1963). Research on SRG burgeoned in the 1990s, as researchers began to discover that individuals experienced both negative *and* positive outcomes in response to stressful events (Joseph, Williams, & Yule, 1993; Lyons, 1991; Tedeschi & Calhoun, 1989-90). Positive changes reported in the literature include perceived increases in emotional strength (Affleck, Tennen, & Gershman, 1985; Zemore, Rinholm, Shepel, & Richards, 1989), actual increases in personal resources (Park & Fenster, 2004; Schaefer & Moos, 1992), the development of new coping skills (Schaefer & Moos, 1992), improved relationships with others (Scannell-Desch, 1996; Schaefer & Moos, 1992), and a greater appreciation for life (Gaskins & Brown, 1992). In a review of the research examining growth following adversity, Calhoun and Tedeschi (1999) found that between 30 and 90% of people who experienced a traumatic life event reported positive growth as a result of the experience.

A major task for SRG researchers is to identify personal and environmental factors that are associated with and predict growth in the aftermath of stress. Many factors have been linked with growth, including but not limited to level of trauma (Swickert, Hittner, DeRoma, & Saylor, 2006), stressfulness of the event (Park et al.,

1996), previous trauma experience (Swickert et al., 2006), spirituality (Parappully, Rosenbaum, van den Daele, & Nzewi, 2002; Park et al., 1996), being female (Kesimci, Gőral, & GenÇőz, 2006), being African American (Siegel, Schrimshaw, & Pretter, 2005), interpersonal relationships (Poorman, 2002), social support satisfaction (Park et al., 1996), and optimism (Milam, 2006). Because of the equivocal findings regarding the variables that best predict growth, Linley and Joseph (2004) conducted a qualitative review in order to identify factors that consistently demonstrate a relationship with SRG. After reviewing 39 studies published between 1993 and 2002, the researchers found cognitive processing, cognitive appraisals of stress, problem-focused coping, acceptance coping, positive reinterpretation coping, optimism, religion, and positive affect as the factors most consistently related to SRG.

Although the Linley and Joseph (2004) review provides some clarity to the factors that predict SRG, research conducted since 2002 has failed to support several of their findings. For example, as found in the review, optimism has been suggested as a likely predictor of SRG (Affleck & Tennen, 1996; Tedeschi & Calhoun, 1996). However, studies conducted since the Linley and Joseph review have failed to find a relationship between optimism and SRG (Park & Fenster, 2004; Tedeschi & Calhoun, 2004). Cognitive appraisals and coping strategies were also found by Linley and Joseph to consistently lead to SRG. Although studies have generally corroborated this finding, the large number of appraisals and coping strategies found to relate to SRG makes it difficult to identify the appraisals and strategies most salient for SRG, and the pathways through which they exert their effect (Gőral, Kesimci, & GenÇőz, 2006; Park & Fenster, 2004; Siegel et al., 2006).

The lack of agreement between SRG studies may largely be due to differences in research design and participant characteristics. A major weakness of many studies of SRG is the use of cross-sectional data when examining predictors of growth (Linley & Joseph, 2004; Park & Helgeson, 2006). Although difficult to obtain, data on participants before the occurrence of the stressor allows researchers to more clearly determine the factors that predict growth. Without prospective participant data, researchers will have difficulty knowing whether factors (e.g., spirituality) lead to growth, or are an indicator of growth. When using a prospective design, simply applying concepts shown to relate to SRG in one context to individuals in a different context may lead to an incomplete understanding of growth (Woodward & Joseph, 2003).

Researchers interested in gaining an in-depth understanding of SRG may employ qualitative research methods. Qualitative studies of SRG allow researchers to understand how growth occurs for individuals in the context of their lives, and provide insight into individuals' experiences of growth. As Massey, Cameron, Oullette, and Fine (1998) stated:

> Qualitative studies of SRG allow researchers to hear how respondents make meaning of their lives - the transitions, contexts, challenges, obstacles, networks of support and stress - without limiting them to the meanings that we as researchers have decided a priori are relevant, useful, even healthy. (pp. 350-351)

Qualitative studies of SRG have focused on a variety of individuals, including arthritis patients (Danoff-Burg & Revenson, 2005), victims of childhood abuse (Woodward & Joseph, 2003), individuals suffering from chronic illness (Abraido-Lanza, Guier, & Colon, 1998), and parents whose children were murdered (Parappully, Rosenbaum, Van den Daele, Nzewi, 2002). The findings of qualitative studies have generally supported

Tedeschi and Calhoun's (1996) five domains of growth in individuals following trauma. The five domains are (a) personal strength, (b) appreciation for life, (c) spirituality, (d) relationships with others, and (e) new possibilities. However, interviews and narratives of individuals who have suffered trauma go beyond an identification of the characteristics of growth, and toward a description of how growth occurred. For example, in their study of SRG in victims of childhood abuse, Woodward and Joseph (2003) found that not only did abuse victims perceive psychological changes as a result of abuse, but that the vehicles to this change included an awakening of responsibility, and validation and acceptance.

The Context for SRG

As stated previously, a major strength of using qualitative research to study SRG is to gain an understanding of the context through which growth occurs (Massey et al., 1998). Although some studies have focused on SRG in individuals who have lived through stressful circumstances such as war (Maguen, Vogt, King, King, & Litz, 2006; Solomon & Dekel, 2007), and individuals who work in stressful professions (Shakespeare-Finch, Gow, & Smith, 2005), most SRG research has focused on individuals who have experienced isolated traumatic stressors (e.g., disease, abuse, death of a loved one). Few SRG studies focus on stressful contexts despite previous findings showing the relationship between work environments and stress. Organizational stress, defined as "work-related social psychological stress" (Shirom, 1982, p. 21), has been studied in hospitals (Sarp, Yarpuzlu, & Onder, 2005), clergy (Kemery, 2006), and police, fire, and ambulance officers (Brough, 2004).

Competitive sport has been recognized as a site for organizational stress in athletes (Gould, Jackson, & Finch, 1993; Scanlan, Stein, & Ravizza, 1991). Woodman

and Hardy (2001) recently introduced a theoretical framework of organizational stress in sport. Using this framework as a guide, Fletcher and Hanton (2003) interviewed 14 international performers regarding the sources of organizational stress that they faced. Environmental issues such as the training environment, personal issues such as injury, leadership issues such as coaching, and team issues such as communication were the major themes discussed by the athletes. The following section includes a discussion of research on stress in elite athletes.

Stress in Competitive Sport

Although early studies of stress in athletes focused on the relationship between anxiety and performance (Burton, 1988; Gould, Petlichkoff, Simons, & Vevera, 1987), researchers have also noted the noncompetitive stressors faced by athletes (Gould et al., 1993; Noblet & Gifford, 2002; Scanlan et al., 1991). Scanlan et al. (1991) interviewed 26 former high-level figure skaters regarding the sources of stress that they experienced during their skating career. The interviews were inductively analyzed to produce five major themes representing the sources of stress reported by the skaters: (a) negative aspects of competition, (b) negative significant-other relationships, (c) demands or costs of skating, (d) personal struggles, and (e) traumatic experiences (Scanlan et al., 1991).

Gould et al. (1993) attempted to verify these findings with 17 national champion figure skaters. The researchers identified the sources of stress experienced by skaters both before and after winning their first national championship. Six major themes emerged describing the sources of stress experienced by skaters before winning their first national title: (a) high performance standards based on expected potential, (b) environmental demands on skater resources, (c) competitive anxiety and doubts, (d) stress related to

significant others, (e) physical demands on skater resources, and (f) uncategorized stress sources (Gould et al., 1993). For the time period after winning their first national championship, seven major themes emerged: (a) relationship issues, (b) expectations and pressure to perform, (c) psychological demands on skater resources, (d) physical demands on skater resources, (e) environmental demands on skater resources at the elite level, (f) life-direction concerns, and (g) uncategorized stress sources. These findings support the findings of Scanlan et al. (1991), showing that elite athletes experience stress from both competitive and noncompetitive sources, and that large individual differences exist between elite athletes' stress sources (Gould et al., 1993).

More recently, Noblet and Gifford (2002) investigated sources of stress in Australian football players. Individual interviews and focus groups with 32 players revealed six themes of stress: (a) negative aspects of organizational systems and culture, (b) worries about performance expectations and standards, (c) career development concerns, (d) negative aspects of interpersonal relationships, (e) demanding nature of work itself, and (f) problems associated with the work/nonwork interface.

Qualitative studies of sport-induced stress in athletes highlight the depth and breadth of stress for athletes. The findings of these studies show that elite athletes experience a variety of stressors related to sport participation. Although athletes in each of the three previously discussed studies noted stress related to performance expectations, other stressors in the sport context, such as interpersonal relationships and physical demands, were also often mentioned.

Significance of Study

Athletes face unique stressors, challenges, and obstacles to negotiate on a continuous basis. The mental and physical demands of training and competition may lead to burnout (Cresswell & Eklund, 2007). Serious injuries are common for athletes, and can cause negative emotions such as fear, grief, and anger (Wiese-Bjornstal, Smith, Shaffer, & Morrey, 1998). Transitions in sport, such as being "cut" or moving to a higher level of competition, can be difficult, as athletes struggle to adapt to changing circumstances, new coaching personnel, and roles (Pearson, & Petitpas, 1990). This difficulty is echoed by Miller and Kerr's (2002) contention that participation in competitive sport can lead to negative outcomes for athletes. A common characteristic of stress research in sport is the notion that stress is inherently negative for athletes. Although sport-induced stress may lead to deleterious outcomes such as burnout (Cresswell & Eklund, 2007) and injury (Hanson, McCullagh, & Tonymon, 1992), the aforementioned research on SRG suggests that there may be another side to stress for athletes. That is, stress may lead to growth beyond prestress levels of functioning. Research in sport psychology has yet to tap this potentially enlightening aspect of the stress response in competitive athletes.

As a way to maximize the benefits of competitive sport, Miller and Kerr (2002) suggested a shift from a performance-focused view of excellence to an athlete-centered model of sport psychology research and practice that acknowledges performance improvements as one aspect of positive developmental changes that can occur through sport participation (Miller & Kerr, 2002). Similarly, Danish, Petitpas, and Hale (1992) proposed a developmental-educational intervention model of sport psychology, in which athletes treat challenges as unique opportunities for personal growth and development

both in and out of sport, rather than as threats to one's well-being. Because of a focus on positive outcomes and personal growth in response to stress, the study of SRG mirrors the recent shift in sport psychology from performance enhancement to personal development through sport.

Research points to the potential that stressful sport experiences hold for psychological growth in sport participants. Udry, Gould, Bridges, and Beck (1997) interviewed 21 skiers who had suffered season-ending injuries. Twenty of the skiers noted positive benefits of being injured, including psychologically based performance enhancement, physical/technical benefits, and personal growth benefits. In a more recent study, Podlog and Eklund (2006) conducted multiple interviews with 12 competitive athletes from a variety of sports regarding their experience of returning from injury. Athletes were interviewed once immediately prior to returning to competition, and 2-3 more times over the next 6-8 months. The authors found that in addition to the adversity that the athletes encountered upon returning to sport, athletes also reported positive consequences of the injury, such as a renewed perspective on sport, increased motivation, and an improved ability to cope with frustrations.

Galli and Vealey (2008) conducted interviews with 10 high-level athletes regarding the biggest adversity that they had ever faced in sport. Adversities identified by the athletes included career ending injury, performance slumps, and transition. An inductive analysis of the interviews revealed that athletes perceived gaining strength, learning, and increased appreciation of significant others as outcomes of their adversity. The findings of all three studies are in accordance with Schaefer and Moos' (1992) description of increased personal resources, improved relationships, and improved coping

skills as indicators of growth, and show that sport stressors can lead to growth both inside and outside of the sport context.

Although the findings of the aforementioned studies provide initial evidence for sport-induced SRG, a study specifically focused on growth is necessary in order to understand the nature of this phenomenon in athletes. Further, it is important to not only learn about the frequency of SRG in athletes, but about athletes' experiences of growth in response to stressors. Knowledge gained from this study can be used by coaches, teachers, athletic trainers, and other health professionals to facilitate growth and improvement for athletes.

Study Purpose

The purpose of this study was to gain an understanding of SRG in Division I intercollegiate athletes. An explanatory mixed methods design was employed. After an initial quantitative phase, qualitative data served as a follow-up to obtain more in-depth responses about SRG in Division I intercollegiate athletes (Creswell, 2005). In the quantitative phase, the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996) was used to assess the frequency of SRG in a sample of Division I athletes from the state of Utah. Athletes who reported at least a moderate degree of growth were selected for the second phase. Semistructured interviews were conducted in order to explore sport-induced SRG in athletes. This phase helped the researcher to better understand how high-level athletes achieved growth as a result of their stressful sport experiences.

Research Questions

The following research questions were addressed by this study:

1. How much SRG do Division I athletes report in response to sport stressors?
2. What is the relationship between stressor factors and cognitive appraisals, and SRG?
3. What differences exist between athletes on SRG?
4. What are athletes' experiences of stressful events in sport?
5. In what ways does growth manifest as a result of sport-related stress for athletes?
6. What personal, environmental, social mechanisms assist athletes' positive growth as a result of sport-related stress?

Limitations

The limitations of the study are the following:

1. The participants may not feel comfortable answering certain questions related to their growth and thus may refuse to answer. For example, some of the items ask about changes in participants' relationship with God. Some of the participants may not believe in God, and thus choose not to respond to these questions.
2. The participants may provide socially desirable answers (i.e., reporting positive change even if they do not truly feel positively changed) rather than honest responses.
3. The retrospective nature of this study may inhibit participants' ability to accurately recall and report their stressful experiences.

Delimitations

The following delimitations will be applied to this study:

1. Division I athletes in Salt Lake and Utah counties from a variety of sports will be included.
2. Only adult participants (18 years of age and older) will be included.

Assumptions

The assumptions of the study are the following:

1. The participants will understand all questions, and answer as honestly as possible.
2. The participants will be able to identify a major sport-related stressor in the past 3 years.

Definition of Terms

Coping: Constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person (Lazarus & Folkman, 1984).

Stress: The condition that results when person-environment transactions lead the individual to perceive a discrepancy between the demands of a situation and the resources of their biological, psychological, or social systems (Selye & Fortier, 1950).

Stressor: An activity, event, or other stimulus that causes stress (American Heritage Dictionary, 2000).

Sport Stressor: An activity, event, or other stimulus within the context of competitive sport that causes stress (Reel, Jameison, SooHoo, & Gill, 2005).

Stress-related Growth: Positive changes that occur in individuals in the aftermath of stressful life experiences (Park et al., 1996).

CHAPTER 2

LITERATURE REVIEW

Much research has been devoted to the relationship between psychological stress and pathology (Antonovsky, 1987). One result of the strong research focus on pathology has been the development of a considerable body of knowledge on psychological disorders such as posttraumatic stress disorder (McKeever & Huff, 2003), depression (Berzoff & Hayes, 2008), and anxiety (Dozois & Westra, 2004). Although an emphasis on pathology has led to a better understanding of the etiology and treatment of mental illness, researchers have begun to shift to an emphasis on the positive attributes of individuals that allow them to successfully manage crises and ward off psychological disorders. The positive psychology movement encourages researchers to study the traits, processes, and outcomes of human strengths (Antonovsky, 1987; Seligman & Csikszentmihalyi, 2000). As Seligman and Csikszentmihalyi stated in their seminal article on positive psychology:

> the time has arrived for a positive psychology, our message is to remind our field that psychology is not just the study of pathology, weakness, and damage; it is also the study of strength and virtue. Treatment is not just fixing what is wrong; it is nurturing what is best. (p. 7)

Several psychological concepts have been identified as representative of the positive psychology movement, including optimism, perseverance, and self-determination (Carver & Scheier, 2003; Peterson, 2000; Ryan & Deci, 2000). Carver and

Scheier (2003) identified growth as an important domain of human strength. A growing body of research in the past 20 years has focused on how individuals not only avoid psychopathology, but gain strength following stress and trauma.

Stress-Related Growth

Stress-related growth (SRG), also referred to as posttraumatic growth, thriving, benefit finding, and perceived benefits, is defined as positive changes in individuals following adverse events (Park et al., 1996; Tedeschi & Calhoun, 1995). Individuals experiencing adversity ranging from relationship problems (Park et al., 1996) to the death of a loved one (Cadell, Regehr, & Hemsworth, 2003) have reported growth as a result of their experience. Although the experience of a traumatic event may lead to a variety of negative sequelae, between 30 and 90% of individuals report positive changes as a result of their trauma (Calhoun & Tedeschi, 1999). For example, Affleck, Tennen, Croog, and Levine (1987) examined perceived benefits in 287 heart attack victims at 7 weeks following the attack, and again 8 years following the attack. The authors measured perceived benefits through an open-ended question asking participants if they saw any possible benefits, gains, or advantages because of their heart attack. The results showed that 58.2% of the participants at 7 weeks postattack believed that there were benefits to having suffered a heart attack. Interestingly, patients who reported benefits at 7 weeks postattack were less likely to have had another attack, and had lower levels of morbidity 8 years later (Affleck et al., 1987). In another study, 83% of breast cancer survivors reported at least one benefit from their cancer episode (Sears, Stanton, & Danoff-Burg, 2003).

A variety of indicators of growth have been found by researchers, including perceived increases in emotional strength (Affleck et al., 1985; Zemore et al., 1989), actual increases in personal resources (Park & Fenster, 2004; Schaefer & Moos, 1992), the development of new coping skills (Schaefer & Moos, 1992), improved relationships with others (Scannell-Desch, 2000; Schaefer & Moos, 1992), and a greater appreciation for life (Gaskins & Brown, 1992). Following a review of the literature, Tedeschi and Calhoun (1996) identified three broad domains of growth typically experienced by individuals following stress and trauma. The three domains of growth were (a) perceived changes in the self, (b) a changed sense of relationships with others, and (c) a changed philosophy of life.

The following sections will focus on research and theory related to SRG. The first section includes a brief discussion of the philosophic, theoretical, and research origins of SRG. Second, literature supporting each of the previously stated domains of growth is discussed. Third, an overview of research on the correlates of SRG is provided. Finally, several conceptual models and theories of SRG are presented.

Origins of SRG Research

Although the scientific study of SRG has occurred only recently, the notion of positive change and personal growth as a consequence of human suffering has roots in ancient philosophy and religion (Calhoun & Tedeschi, 2006; Linley & Joseph, 2003). For example, in Christianity the suffering of Jesus is viewed as providing salvation to his followers. Muslims believe that engaging in a month-long regimen of fasting and praying will serve to cleanse the soul and bring them closer to God. Literary works throughout history have emphasized the power of suffering to bring positive change (Calhoun &

Tedeschi, 2006; Linley & Joseph, 2003). The influential book, *Man's Search For Meaning* (Frankl, 1963), provided a detailed account of psychiatrist Victor Frankl's experiences as a prisoner in Nazi concentration camps, and how he was able to find meaning in life despite horrific circumstances.

Scholars in the 1950s and 1960s introduced the notion of positive change from adversity to the field of psychology. Erikson's (1950) theory of psychosocial development posits eight stages of growth. Each stage contains specific developmental challenges that individuals must overcome in order to gain the skills necessary to negotiate subsequent stages. For example, children between the ages of 7 and 11 face the crisis of industry versus inferiority. Children who successfully accomplish important tasks (e.g., performing well on school work) will develop a sense of competence that will aid them in future stages. In his crisis theory, Caplan (1964) discussed life crises as transitional periods that provide individuals with the opportunity for personal growth. Despite early conceptualizations of the facilitative role of challenges and crises in personal growth, only a few isolated studies in the 1970s and 1980s showed evidence of growth from negative life experiences (e.g., Affleck, Pfeiffer, Tennen, & Fifield, 1988; Cella & Tross, 1986). It was not until the early 1990s that researchers began to systematically focus on SRG (Calhoun & Tedeschi, 2006). Calhoun and Tedeschi (2006) noted several important works published in the early to mid-1990s as critical in the development of SRG as a legitimate field of research. First, Schaefer and Moos (1992) drew from research on divorce, combat, and illness to publish a conceptual model for understanding positive outcomes of life crises and transitions. Second, Tedeschi and Calhoun (1995) published *Trauma & Transformation,* the first book focused on growth

from trauma. Finally, two questionnaires, Park et al.'s (1996) Stress-Related Growth Scale (SRGS), and Tedeschi and Calhoun's (1996) Posttraumatic-Growth Inventory (PTGI), were designed to measure growth following adversity. Growth scales such as the SRGS and PTGI not only measure overall psychological growth, but also measure growth on a variety of subdomains.

The Domains of SRG

The following sections focus on research supporting Tedeschi and Calhoun's (1996) three domains of growth in response to stress and trauma. The first section focuses on perceived changes in the self, such as increased personal strength, and the realization of new possibilities. The second section focuses on changed relationships with others. The final section focuses on a changed life philosophy, including an increased appreciation for life, and increased spirituality.

Perceived Changes in the Self

Most studies showing SRG have found that individuals report feeling stronger or positively changed following a trauma. Perceived changes in the self were described as feelings of increased personal strength or the realization of new possibilities in life (Calhoun & Tedeschi, 2006). Individuals who have suffered from serious diseases such as cancer and HIV/AIDS frequently report self-improvement as a result of their experience with illness (Milam, 2006; Stanton, Bower, & Low, 2006). Kennedy, Tellegen, Kennedy, and Havernick (1976) used structured interviews to examine the psychological responses of 22 patients cured of advanced cancer. The researchers suggested that most patients had a positive attitude change because of their cancer,

including increased tolerance, and increased morality. More recent studies showed similar perceptions of personal improvement in cancer patients. In a study of psychosocial adjustment in cancer patients undergoing evaluation for bone marrow transplantation, 24% of patients reported having greater self-respect than before their cancer diagnosis, 13% reported having more of an ability to be independent, and 10% reported a greater ability to handle daily events (Andrykowski, Brady, & Hunt, 1993).

In addition to cancer patients, a changed perception of the self has been reported by individuals suffering from a variety of health complications. Gillen (2005) conducted interviews with 16 stroke patients in order to identify positive consequences of suffering a stroke. One of the major themes identified by the patients was personal growth. Examples of personal growth reported include increased patience, and being more humble. In a grounded theory study of 10 individuals with visible impairment resulting from chronic illness or serious injury, participants noted finding an inner strength, and gaining empathy from their experience (Salick & Auerbach, 2006). Pakenham (2005) used an open-ended question to find the perceived benefits of 47 caregivers of multiple sclerosis patients. Eleven percent of the caregivers believed that they had achieved personal growth. Examples of perceptions of personal growth from the caregivers included becoming more patient, becoming more tolerant, and coming to the realization that they do not have to control every situation.

Perceived changes in the self have also been reported by individuals in response to adversity other than physical illness. Poorman (2002) conducted focus groups with 21 women who had experienced abuse in adult interpersonal relationships. The women discussed "thriving" as a result of their abuse experiences. Thriving was characterized by

self-satisfaction, self-confidence, self-respect, self-belief, maturity, and feeling a sense of pride. Participants also discussed feeling a sense of personal power to be responsible for one's life and to have an impact on others. The results of the studies discussed in this section support perceived changes in the self as a domain of SRG for individuals who have experienced stress and trauma. Perceived changes in the self are characterized by improvements in a variety of personal characteristics, including patience, tolerance, attitude, and self-respect.

Changed Relationships with Others

In addition to perceived changes in the self, individuals who have experienced stress and trauma often report having stronger interpersonal relationships than before their trauma. Improved relationships have been noted as one of the main benefits of the cancer experience (Thornton, 2002). In interviews with 101 early-stage breast cancer patients, Sears et al. (2003) found that 46% cited improvements in relating to others as a result of their cancer experience. Other studies have found that cancer survivors feel closer to family members following their cancer episode. For example, one study of 34 testicular cancer survivors and their spouses found that 82% of patients and 85% of their wives believed that they were drawn closer to their spouse because of the cancer episode (Gritz, Wellisch, Siau, & Wang, 1990). In another study, over 50% of cancer survivors believed that their relationship with their spouse had been strengthened because of cancer, and almost 50% of survivors believed that relationships with their friends and children had been strengthened.

Strengthened relationships have also been found as a benefit of the death of a loved one. Malinak, Hoyt, and Patterson (1979) used interviews to examine adults'

reaction to the death of a parent, and found that several participants realized benefits in the form of a greater caring for friends and loved ones, and a realization of the importance of relationships with others. In a more recent study, Danoff-Burg and Revenson (2005) examined the relationship benefits of physical illness in a sample of 136 rheumatoid arthritis patients. The authors identified interpersonal benefits through an open-ended question asking patients about the positive effects having rheumatoid arthritis had on their relationships with others. For arthritis patients, 71.3% described relationship benefits both with close others, such as family, and in less intimate relationships, such as with health professionals. Other relationship benefits mentioned included increased compassion/empathy, educating others, and learning to accept help.

The results of the studies discussed in this section support changed relationships with others as a domain of SRG for individuals who have experienced stress and trauma. Despite experiencing a variety of negative consequences, individuals who have suffered severe stress and trauma often express feeling closer to loved ones and others as a result of their trauma. Individuals suffering from illness may develop a greater realization of the social support in their lives. Other stressors, such as the death of a loved one, may spark increased feelings of appreciation for family and friends who still live.

Changed Philosophy of Life

The final domain of growth often discussed by individuals who have experienced stress and trauma is a changed philosophy of life. As with the other domains of growth, a changed life philosophy has been identified as a benefit in studies of cancer survivors. For example, Cella and Tross (1986) compared the psychological adjustment of 60 male Hodgkin's disease survivors with 20 physically healthy men using self-report inventories,

interviews, projective tests, and observer ratings of adjustment. Although the cancer survivors exhibited greater psychological dysfunction than the healthy sample, they also had a greater appreciation for life than the healthy sample. Similarly, Andrykowski et al. (1996) compared the psychosocial adaptation of women with breast cancer to an age-matched sample of women with benign breast problems. Both groups of women completed a measure of psychosocial adaptation to cancer in reference to before diagnosis (either cancer or benign breast problem). The women diagnosed with breast cancer reported significantly greater improvements in their outlook on life problems and satisfaction with religion relative to the women with benign breast problems.

Victims of severe accidents, natural disasters, and those who have lost a loved one have also reported a changed outlook on life. Ninety-four percent of the survivors of a sinking cruise ship reported that they no longer took life for granted, and 71% said that they now lived each day to the fullest (Joseph et al., 1993). In one of the few studies of SRG conducted with children, Salter and Stallard (2004) interviewed 158 child survivors of road traffic accidents. Many of the children felt that they were lucky to be alive, and had an increased motivation to make the best of their lives. Although some of the children gained a sense of vigor for life, others developed a more relaxed approach by vowing not to stress out over the small things. In another study, parents of children who had been murdered discussed a spiritual strengthening that occurred as a result of their tragedy (Parappully et al., 2002). Although some the parents in this study expressed initially feeling anger toward God, many also felt that they had a spiritual awakening, and that they were now closer to God because of the murder of their child.

The results of the studies discussed in this section support a changed philosophy of life as a domain of SRG for individuals who have experienced stress and trauma. People who suffer from illness often report having a greater appreciation for life, and a better outlook on life problems than before their illness. Despite the physical and emotional pain that they feel, victims of severe accidents and individuals who have lost a loved one noted a changed outlook on life, including a renewed vigor for accomplishing life goals, and a closer relationship with God.

Correlates of SRG

Early qualitative studies such as those previously discussed led to an acceptance of SRG as an important construct for study by psychology researchers. The development of self-report measures of SRG in the mid-1990s allowed researchers to explore relationships between SRG and other relevant variables. Researchers have examined the relationship between various demographic characteristics, personality characteristics, and coping strategies and SRG. The relationship between SRG and a variety of mental health outcomes such as depression, anxiety, and quality of life has also been examined (Helgeson, Reynolds, & Tomich, 2006). The following sections include a discussion of the factors proposed to have the strongest relationship with SRG. First, the relationship between SRG and sociodemographic characteristics such as gender, socioeconomic status (SES), ethnicity, and age is discussed. Second, the relationship between SRG and personal resources such as optimism, locus of control, and religiousness is discussed. Third, the relationship between SRG and coping strategies such as re-appraisal and acceptance is discussed. Fourth, the relationship between SRG and stressor-related factors (e.g., perceived severity, time since stressor) is discussed. Finally, the relationship

between SRG and a variety of physical and mental health outcomes is discussed. The section concludes with a focus on Schaefer and Moos' (1992) proposed conceptual model of SRG.

SRG and Sociodemographic Characteristics

Several studies have reported gender, race and ethnicity, and age effects on SRG. Among all sociodemographic variables, gender differences in growth have been the most consistent finding across studies (Linley & Joseph, 2004). With few exceptions, women tend to report more SRG than men following stressful or traumatic events. In two studies of SRG in college students following a range of stressful events (e.g., academic problems, relationship problems), women scored significantly higher than men on measures of SRG (Park et al., 1996; Tedeschi & Calhoun, 1996). More recently, Kesimci et al. (2005) examined predictors of SRG in 132 Turkish college students. Similar to the earlier studies, females reported more growth than males. Comparisons of growth across gender have also been made in nonstudent populations. Milam (2004) examined SRG in 835 male and female HIV/AIDS patients, and found that female patients reported more growth than the male patients. Although the exact mechanisms behind gender differences in SRG remain unclear, researchers have suggested that the tendency of women to acknowledge their emotions, and to seek social support in times of stress may explain why they report more growth than men (L'Abate, 1992; Thoits, 1991).

Younger individuals have generally reported more growth than older individuals in studies of SRG. For example, in a study of growth in parents following the death of a son or daughter, Polatinsky and Esprey (2000) found that parents' age was negatively related to the realization of new possibilities in life, the ability to relate to others, personal

strength, and overall growth. Stanton et al. (2006) conducted a review of the correlates of SRG in cancer patients, and found a significant negative relationship between SRG and age in 7 of 12 studies. Two explanations have been suggested as accounting for higher reports of growth in younger individuals. First, as many studies of growth have focused on individuals with chronic illness, perhaps older individuals are more concerned with the imminence of their own death, and are thus less likely to perceive growth than younger individuals (Davis, Nolen-Hoeksema, & Larson, 1998). Second, it might be that younger individuals, who have less life experience than older individuals, perceive adverse life events as more threatening than their older counterparts. Higher threat severity is hypothesized by several researchers as leading to more SRG (Taylor, 1983; Tedeschi & Calhoun, 2004). One exception to the finding of a negative relationship between SRG and age is in adolescents, in which case a positive relationship has been found (Milam, Ritt-Olson, & Unger, 2004). The finding of a positive relationship between age and SRG in adolescents is indicative of the importance of reaching a certain level of cognitive and emotional maturity before having the capability to perceive growth.

Race and ethnicity has been shown to relate to SRG, such that ethnic minority individuals report more growth than Caucasian individuals (Stanton et al., 2006). Tomich and Helgeson (2004) found that African American and Hispanic women perceived more benefits to having breast cancer than Caucasian women. In their meta-analysis of SRG, Helgeson et al. (2006) found that SRG was more strongly related to positive mental health outcomes when studies included a larger percentage of minority participants. Although the reasons for racial and ethnic differences in SRG remain unclear, it may be

that ethnic minority individuals' previous experience with discrimination and hardship has better prepared them to achieve growth from adversity than Caucasian individuals (Helgeson et al., 2006; Tomich & Helgeson, 2004). Another reason for higher growth in ethnic minority individuals may be their tendency to rely on religious coping in the face of adversity (Koenig, 1998). Religiosity and spirituality have been suggested as important constructs for the occurrence of SRG (Park et al., 1996; Park & Fenster, 2004).

Although often related to ethnicity, SES (as measured by level of income, education, and/or employment status) has been found to be an independent correlate of SRG (Tomich & Helgeson, 2004). In two separate studies, individuals with a higher income were found to report more growth as a result of chronic illness (Cordova, Cunningham, Carlson, & Andrykowski, 2001; Updegraff, Taylor, Kemeny, & Wyatt, 2002). However, several studies of cancer patients have found either a negative relationship or no relationship between SES and SRG (e.g., Tomich & Helgeson, 2004). Thus, it appears that the relationship between SES and SRG is small, and perhaps confounded by other psychosocial variables (Linley & Joseph, 2004; Stanton et al., 2006).

More research is needed to gain a better understanding of the relationship between race and ethnicity, social class, and SRG. Most studies reviewed failed to include an adequate number of ethnic minorities, or samples with a wide enough range of social classes to make meaningful comparisons. The life histories, economic resources, and perceptions of "what counts" as a stressful event could potentially be different for persons of color and low income individuals (Blankenship, 1998). Research aimed at

exploring the untold SRG experiences of ethnic minority and low SES individuals would fill a large gap in the literature.

SRG and Stressor-Related Factors

Factors related to the stressful event itself may have an impact on the amount of growth that individuals experience (Schaefer & Moos, 1992). Stressor-related factors that have been studied in relation to SRG include the type of stressful event (e.g., illness vs. natural disaster), the duration of the event, the severity of the event (e.g., stage of cancer), and the amount of time since the event occurred.

Although few studies have compared SRG between individuals who have experienced different types of stressors, the studies that have made such comparisons have found little difference in growth by event type (Milam et al., 2004; Park et al., 1996). However, in comparing PTGI scores across several recent studies, female victims of intimate partner violence scored highest on the PTGI (Cobb, Tedeschi, Calhoun, & Cann, 2006), whereas German survivors of severe car accidents scored the lowest (Zoellner, Rabe, Karl, & Maercker, 2008). Of course, significant differences in SRG between individuals who have suffered different stressors could be due to a variety of factors other than the type of event, including cultural differences, and cognitive appraisals of the stressor (Linley & Joseph, 2004; Zoellner et al., 2008). The duration of the stressor may also have an effect on SRG. For example, Rando (1983) found that bereaved spouses and parents of individuals whose terminal illness was over a longer period of time had more positive outcomes than the spouses and parents of individuals whose deaths were more sudden and unexpected. The findings of the aforementioned studies suggest that growth is more likely when individuals have a chance to process the

grief that is to come. Both the actual and perceived severity of the stressful event can influence the extent of SRG (Taylor, 1983; Tedeschi & Calhoun, 2004). In a meta-analysis of the correlates of growth, Helgeson et al. (2006) found both objective and subjective severity to be related to more growth. The likely explanation for the positive correlation between stress severity and SRG is that stressors must be severe enough to cause individuals to question their basic assumptions about the world, and to subsequently make changes in the way that they live their lives (Tedeschi & Calhoun, 2004).

Finally, growth may vary according to the amount of time that has occurred since the stressful event. Although some studies have found a positive relationship between the amount of time since the stressor occurred and the amount of growth experienced (Cordova et al., 2001), others have found no relationship (Milam et al., 2004). Helgeson et al. (2006) found no effect of time since stressor on SRG in their meta-analysis. A weakness in many studies assessing the influence of the time since the stressor occurred on SRG is the use of cross sectional designs that limit researchers' ability to ascertain the true relationship between these variables. One exception was a longitudinal study of positive changes in female sexual assault survivors (Frazier, Conlon, & Glaser, 2001). The researchers found that the participants recognized growth within 2 weeks post-assault, and that most growth occurred between 2 weeks and 2 months following the assault. Further, growth remained fairly stable even up to 1 year following the assault.

SRG and Personal Resources

Individuals may possess a variety of psychosocial, emotional, and spiritual resources that increase their chances of experiencing SRG. Three resources that have been found to relate to SRG on a fairly consistent basis are discussed in the following sections.

Optimism

Optimism refers to a general expectancy that positive outcomes will occur (Scheier & Carver, 1985). As compared to pessimists, optimists tend to rely on more problem-focused coping strategies, and consequently have more favorable health outcomes (Scheier, Carver, & Bridges, 1994). For example, Reker (1997) found that elderly persons who listed more things that they had to look forward to in the near future (labeled as optimists) exhibited fewer physical symptoms and more positive well-being 2 years later than elderly persons who listed less things that they had to look forward to. More recently, optimism has been linked to greater life satisfaction and less depression and anxiety in the parents of child cancer patients (Fotiadou, Barlow, Powell, & Langton, 2008). For athletes, higher levels of optimism have been shown to relate to lower levels of burnout in young Chinese volleyball players (Chen, Kee, & Tsai, 2008).

Although the link between optimism and SRG seems to make theoretical sense, research findings have been equivocal (Affleck & Tennen, 1996). Curbow, Somerfield, Baker, and Wingard (1993) examined the relationship between dispositional optimism and positive personal changes following bone marrow transplantation. Greater optimism was related to reports of positive life changes and personal growth. Tedeschi and Calhoun (1996) found a significant positive relationship between optimism and SRG in college

students who indicated that they had experienced a significant negative life event in the past 5 years. Optimism has also been found to relate to SRG in HIV/AIDS patients, although it did not predict growth over time (Milam, 2004). Despite findings of a positive relationship between optimism and SRG, some studies have found no relationship (Bellizzi & Blank, 2006; Park et al., 1996; Park & Fenster, 2004; Sears et al., 2003). Tedeschi and Calhoun (2004) noted that although some studies have revealed a correlation between optimism and SRG, these correlations are usually of a low magnitude. They suggest that optimism may be related to SRG indirectly. Specifically, optimists may be better at focusing their resources on the most important issues, thus leading to more positive outcomes and greater perceptions of growth.

Spirituality and Religiousness

Religiousness is defined as "adherence to a belief system associated with particular denominations or sects and associated rituals and practices" (Brennan, 2004, p. 195), whereas s*pirituality* is defined as "the basic human drive for meaning, purpose, and moral relatedness among people, with the universe, and with the ground of our being" (Canda, 1989, p. 36). For many individuals, spirituality and/or religion are a primary means through which they make sense of the world (Ozorak, 2005). Allport and Ross (1967) distinguished between extrinsic and intrinsic religious orientations. Whereas extrinsic religiousness refers to "using" religion as a means to an end (e.g., social status), intrinsic religiousness refers to "living" religion by internalizing the basic tenets of a given religion. Intrinsic religiousness has been shown to lead to SRG (Park et al., 1996; Park & Fenster, 2004), whereas extrinsic religiousness has been shown to have a negative relationship with adaptation to stress (Brennan, 2004).

In a recent qualitative study of SRG in 15 HIV caregivers, religion and spirituality emerged as important for the SRG experience of all participants (Cadell, 2007). The participants often spontaneously spoke of the central role played by religion and spirituality in their growth, and the intertwining of religion and social support often resulted in a new and better understanding of their connections to the world. In another qualitative study, Siegel and Schrimshaw (2002) found that religion and spiritual beliefs provided HIV and AIDS patients with a number of benefits, including strength and empowerment, ease of emotional burdens, a sense of belonging, and reduced fear of death. Despite research evidence for a positive association between religiousness and SRG, Pargament, Desai, and McConnell (2006) suggested that religiousness and spirituality can also lead to mental and emotional decline following stress. Decline may occur when individuals feel betrayed, abandoned, or punished by God following tragedy. Whether growth or decline occurs may depend on the nature of the trauma, individuals' coping resources, and the integration, flexibility, differentiation, and benevolence of individuals' spiritual orienting systems (Pargament et al., 2006).

Social Support

Social support has been described as a "meta-construct" consisting of several constructs related to a variety of characteristics of an individual's social world that might promote well-being and/or buffer the effects of stress (Haber, Cohen, Lucas, & Baltes, 2007). The results of several studies suggest that individuals' perception of support from others is related to decreased depression (Peirce, Frone, Russell, Cooper, & Mudar, 2000), life satisfaction (Aquino, Russell, Cutrona, & Altmaier, 1996), and mental and physical health (House, Landis, & Umberson, 1988). Park et al. (1996) found that social

support satisfaction was moderately related to SRG in college students who suffered a variety of stressors. Borja, Callahan, and Long (2006) found perceived support to be related to positive outcomes in victims of sexual assault. Social support had a positive direct effect on SRG in a study of bereaved HIV/AIDS caregivers (Cadell, Regehr, & Hemsworth, 2003), and in another study, mediated the relationship between SRG and decreased depression in individuals suffering from HIV (Littlewood, Vanable, Carey, & Blair, 2008). Researchers have similarly found social support to be an important factor in the adjustment of injured athletes (Udry, Gould, Bridges, & Tuffey, 1997). In a study of athletes who acquired spinal cord injury through sport, various forms of social support (i.e., informational, tangible, emotional, esteem) were found to have a positive influence on the quality of life of these individuals (Rees, Smith, & Sparkes, 2003).

SRG and Coping

Although individuals who are optimistic or have a strong religious faith may be more likely to experience SRG, it is likely that the relationship between these resources and growth are mediated by the ways in which individuals perceive and subsequently deal with their stress (Park, 1998). *Coping* is defined as "attempts to alter the environment and to regulate one's self to achieve short and long-term goals in the context of stress" (Park, Aldwin, Fenster, & Snyder, 2008, p. 301). Proponents of transactional models of coping posit that knowledge of individuals' personal resources and the nature of stressors are not enough to determine how they will adapt to stress, but that the meanings that individuals attach to stressors, as well as the strategies that they choose to manage their stress are equally important in determining their adjustment (Lazarus & Folkman, 1984).

The process of coping is initiated by the evaluation individuals make of the situation. Situational evaluations are referred to as *cognitive appraisals*, and take two forms: (a) primary, and (b) secondary (Folkman & Lazarus, 1991). During the primary appraisal, individuals ask the question, "What is at stake in this encounter?" The primary appraisal can be either irrelevant, benign-positive, or stressful. Irrelevant primary appraisals suggest that individuals have nothing at stake in the encounter, benign-positive appraisals indicate positive feelings regarding the encounter, and stress appraisals occur when damage to individuals has either already occurred or is expected to occur.

Stress and coping researchers are primarily interested in stress appraisals. There are three subtypes of stress appraisals: (a) harm/loss, (b) threat, and (c) challenge (Lazarus & Folkman, 1984). Harm/loss appraisals occur when physical or psychological damage has already been sustained, such as following a career-ending injury. Threat appraisals are made when some harm or loss is anticipated, but has not yet occurred. Threat appraisals often accompany harm/loss appraisals, and lead to negative emotions such as fear and doubt. For example, the athlete who suffered a career-ending injury might make a threat appraisal concerning their ability to make a living in another profession. Finally, challenge appraisals are made when individuals see an opportunity for positive growth as a result of a stressor, and result in positive emotions such as eagerness and excitement. Primary appraisals may also concern the extent to which individuals feel like the stressor was in their control, and the extent to which the stressor violates individuals' fundamental beliefs and expectations about the world (Park, 1998). Secondary appraisals, although not necessarily occurring *after* primary appraisals, refer to the point at which individuals ask the question, "What can be done?" The secondary

appraisals that individuals make help determine the type of coping strategies employed (Lazarus & Folkman, 1984). Examples of secondary cognitive appraisals include individuals' perceptions of their coping efficacy, and their awareness of the event's occurrence.

The varied functions of coping are categorized into two main types: (a) problem-focused coping, and (b) emotion-focused coping (Lazarus & Folkman, 1984). Problem-focused coping strategies are directed toward altering individuals' relationship with their environment. Such strategies might include problem-solving, planning, or information seeking. Conversely, emotion-focused coping strategies are directed toward regulating emotional responses to problems (Folkman & Lazarus, 1991). Emotion-focused strategies might include self-blame, avoidance, distancing, or cognitive reappraisal.

It is important to note that one type of coping is not inherently better than the other. Lazarus and Folkman (1984) suggested that the degree of control individuals have over situations is the main determinant of which type of strategy is most effective. Problem-focused strategies are likely best in situations where individuals have control over the outcome. For example, an athlete who is having trouble learning a new skill is likely better off seeking advice from her coach or watching film of other athletes than avoiding practicing the skill. Emotion-focused strategies, however, are warranted in situations where outcomes are outside individuals' control. An athlete forced to retire because of injury might be better served to reappraise the situation (e.g., "I'll miss competing, but now I have the chance to be involved with sports in a different way"), than by seeking out information about other athletes who have suffered the same injury. Another point to consider is that problem and emotion-focused coping do not always

operate independently (Folkman & Lazarus, 1991; Lazarus & Folkman, 1984). Individuals might use an emotion-focused strategy, such as deep breathing, to reduce anxiety, in order to attend to a problem-focused strategy, such as mental imagery, to rehearse a skill. A coping strategy might also serve duel functions. For example, seeking advice from a coach might alleviate anxiety as well as provide information to help improve performance.

Research on coping and SRG has shown various types of cognitive appraisals and coping strategies to be related to perceptions of growth following stress (Armeli, Gunthert, & Cohen, 2001; Pollard & Kennedy, 2007; Siegel et al., 2005). Individuals' primary and secondary appraisals of stressful events such as percieved threat, harm, awareness, and controllability have all been shown to relate positively with growth (Linley & Joseph, 2004). Armeli et al. assessed appraisals and SRG in samples of college students and college graduates, and found that both threat and challenge appraisals were positively related to growth from participants' most stressful event in the past 2 years. In a study of SRG in college students, Park et al. (1996) found significant positive correlations between scores on the SRGS and questions asking the extent to which the students felt control over the occurrence of a stressful event and the extent to which they were aware that the event would occur. Higher perceptions of threat associated with the stressful event and of harm done as a result of the stressful event were related to more growth in cancer patients (Cordova et al., 2001) and college students (Tedeschi & Calhoun, 1996).

Both problem-focused and emotion-focused coping strategies have been shown to relate to increased growth. The use of a variety of problem-focused strategies such as

active coping, restraint, suppression of competing activities, seeking of instrumental support, and seeking of emotional support characterized individuals who experienced more growth in college students and college graduates (Armeli et al., 2001). Park et al. (1996) examined the coping strategies related to growth from the most stressful events experienced by 256 college students. The problem-focused strategies of seeking emotional social support and turning to religion, and the emotion-focused strategies of acceptance and positive reinterpretation were all positively related to growth.

The relationship between positive reinterpretation coping (PRC) and SRG has been of particular interest to researchers, as the two constructs appear rather similar (Affleck & Tennen, 1993; Park et al., 1996). Whereas SRG refers to perceptions of *actual* change as a result of stress and adversity, PRC refers to an individual's *efforts* to find meaning in a stressful encounter. Not surprisingly, the two constructs have been shown to be highly related (r = .55, Park et al., 1996). However, Sears et al. (2003) provided compelling evidence that SRG and PRC are both related and distinct constructs. The researchers measured optimism, stressor characteristics, cognitive processes, emotional support, mood, quality of life, health status, and PRC at baseline, and SRG 12 months later in 60 women with early stage breast cancer. Although PRC did predict a significant amount of the variance in SRG, the two variables themselves had unique predictors. Hope at baseline predicted PRC at baseline, whereas time since diagnosis and perceived cancer stress uniquely predicted SRG at 12 months. Thus, researchers should not treat PRC and SRG as interchangeable when designing studies of growth.

Two recent studies have advanced researchers' understanding of the mechanisms through which coping may influence SRG. First, Park and Fenster (2004) tested three

different models of SRG in a sample of 94 college students using structural equation modeling. The students completed measures of personal resources (i.e., religiousness, mastery, and optimism), worldviews, and psychological adjustment at Time 1, and 6 months later completed the same measures, in addition to measures of cognitive appraisal (i.e., threat and challenge), coping, cognitive processing, and SRG. The model that tested the pathways from personal resources, to cognitive appraisals, to coping strategies, to SRG was the most successful, and accounted for 46% of the variance in SRG. Specifically, religiousness was related to growth through four pathways: (a) as mediated by restraint/religious coping, (b) as mediated by threat appraisals, (c) as mediated by threat appraisals and venting/social support coping, and (d) as mediated by threat appraisals and disengagement/denial coping. Mastery was related to SRG through six pathways; (a) directly, (b) as mediated by disengagement/denial coping, (c) as mediated by threat appraisals, (d) as mediated by threat appraisals and social support/venting coping, and (e) as mediated by threat appraisals and disengagement/denial coping, and (f) as mediated by threat appraisals and restraint/religious coping. For both religiousness and mastery, only the pathway directly from threat appraisals to SRG was negative. Finally, challenge appraisals were related to growth through three pathways: (a) directly, (b) as mediated by restraint/religious coping, and (c) as mediated by acceptance/positive reinterpretation coping. This study highlights the complex nature of the relationships between personal resources, cognitive appraisals, coping strategies, and SRG.

Park et al. (2008) used structural equation modeling to examine the associations between exposure to the 9/11 terrorist attacks and both SRG and posttraumatic stress as mediated by emotions (i.e., anger and depression) and coping in 1,004 U.S. adults.

Positive coping (e.g., PRC, seeking emotional support) was more strongly related to SRG, and negative coping (e.g., disengagement, venting) was more strongly related to stress. Further, anger was more related to growth, and depression was more related to stress. The researchers also tested two mediational models of the association between 9/11 exposure and growth and stress. The first model examined emotions as a precursor to coping, and the second model examined coping as a precursor to emotions. Both models accounted for a large amount of the variance in SRG (51%) and posttraumatic stress (40%). The emotions to coping model was a slightly better fit to the data than the coping to emotions model, and revealed that coping partially mediated the relationship between anger and SRG. The findings of this study have important implications for future research on both SRG and posttraumatic stress, as it seems that distinct emotions and patterns of coping differentially relate to either SRG or posttraumatic stress.

SRG and Health Outcomes

Beyond examining the demographic, social, and personal variables that predict SRG, researchers have also studied the health outcomes of growth. Although many of the indicators of growth (i.e., increased personal strength, strengthened spirituality, strengthened relationships) do represent positive outcomes, some research has shown that growth may be related to other positive physical and psychological health outcomes (Helgeson et al., 2006; Littlewood et al., 2008). Helgeson et al. conducted a meta-analysis on the relationship between growth and eight different health outcomes across 87 studies. The studies encompassed a wide range of populations and stressors, including survivors of war, disease, rape, and traumatic accidents. The effect sizes for depression, positive well-being, and intrusive-avoidant thoughts were all significant. Specifically,

SRG was associated with less depression, more positive well-being (i.e., positive affect, self-esteem, life satisfaction), and more intrusive-avoidant thoughts. Although the finding that SRG was related to intrusive thoughts on the surface seems to represent evidence of a *negative* health outcome, Helgeson et al. suggested that these thoughts may be indicative of cognitive processing that is necessary for growth to occur. The role of cognitive processing in the growth process is discussed further in the section focused on contemporary theories of SRG.

Some of the studies on the relationship between SRG and health outcomes conducted since the previously discussed meta-analysis have focused on markers of physical health improvement. Milam (2006) explored the relationship between SRG and HIV disease status in 412 adults living with HIV. Participants completed self-report measures of SRG, optimism and pessimism, health behaviors (e.g., exercise frequency, diet), and depressive symptoms at baseline. Further, Milam collected objective information regarding the participants' immune function and viral load at the time of baseline testing. The objective health information was collected again 16-20 months later, and a series of multiple regression analyses were used to examine whether SRG could predict HIV disease status over time. Although there was no main effect for SRG on disease progression, SRG was related to improved immune functioning in Hispanic adults. The author suggested that one explanation for the interaction of ethnicity and SRG might be that Hispanic individuals tend to be more open to religion (one of the subscales on the PTGI) than individuals in other ethnic groups. Indeed, once Milam removed the religion subscale from the PTGI, the interaction effect did weaken. Other results showed that SRG was inversely related to alcohol and illicit drug use by the participants.

Littlewood et al. (2008) found that SRG was associated with increased physical activity in HIV positive individuals. Thus, it seems that SRG is positively related to a variety of mental and physical health outcomes. Although the mechanisms through which these relationships occur remain uncertain, it may be that individuals' cognitive efforts to find benefits in stress may serve to reduce distress, thereby impacting the biological underpinnings of disease, and improving health behaviors (Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000).

Schaefer and Moos' (1992) Conceptual Model of SRG

In response to the growing body of evidence regarding the correlates and outcomes of SRG, Schaefer and Moos (1992) attempted to integrate extant SRG research findings into a model of life crises and personal growth. According to their model, factors related to the person, the environment, and the crisis interact to predict cognitive appraisals and responses, which in turn predict outcomes of life crises. They identified sociodemographic characteristics and personal resources such as health status and self-efficacy as examples of factors related to the person, living situation, and interpersonal relationships as examples of factors related to the environment, and severity and timing as factors related to the crisis. These three factors shape individuals' cognitive appraisals of the crisis, along with the coping responses that they engage in (Schaefer & Moos, 1992). Upon the use of effective appraisals and coping responses, SRG manifests through enhanced social resources such as better relationships with family and friends, enhanced personal resources such as better self-understanding, and the development of new coping skills. Although Schaefer and Moos' (1992) model served as a framework for early

investigations of SRG (e.g., Park et al., 1996), more sophisticated conceptualizations of the SRG process have begun to surface.

Summary

SRG is a complex construct that is influenced by a variety of demographic, personal, and contextual factors. Previous studies have found associations between SRG and demographic characteristics such as gender, race and ethnicity, and socioeconomic status (Stanton et al., 2006). The extent to which individuals are optimistic (Tedeschi & Calhoun, 1996), religious (Cadell, 2007), and socially supported (Borja et al., 2006), as well as factors related to the stressful event itself (e.g., the amount of time since the event occurred; Cordova et al., 2001), may have an impact on growth. SRG research has been strongly influenced by Lazarus and Folkman's (1984) transactional model of stress and coping, as a variety of cognitive appraisals and coping strategies have been linked to growth (Park & Fenster, 2004). The results of some studies have shown that SRG may be related to positive psychological outcomes such as decreased depression, as well as positive physical health outcomes such as increased physical activity (Helgeson et al., 2006; Littlewood et al., 2008). In an attempt to integrate extant research on growth from stress, Schaefer and Moos (1992) developed a conceptual model of SRG. Although the model shaped the focus of early SRG research, newer theories offer the promise of an even stronger understanding of SRG.

Contemporary Theories of SRG

As researchers become more interested in examining the positive psychological outcomes of stress and trauma, intricate theories have been developed to explain how

SRG occurs (Christopher, 2004; Joseph & Linley, 2005; Tedeschi & Calhoun, 2004). In the following sections, the three most current theories of SRG are discussed. First, Tedeschi and Calhoun's (2004) functional descriptive theory is explained. Second, an explanation of Joseph and Linley's (2005) organismic valuing theory is offered. The final section includes a focus on Christopher's (2004) biopsychosocial-evolutionary view of growth.

Tedeschi and Calhoun's (2004) Functional Descriptive Theory

As pioneering researchers in the area of SRG, and the authors of one of the first tools to measure growth, Tedeschi and Calhoun (2004) offered perhaps the most comprehensive theory of SRG. They contend that major life stressors such as death or chronic illness serve as "seismic events" that threaten individuals' assumptions about the world. Individuals face the challenge of managing their distress while at the same time altering their fundamental belief system. Certain personality traits such as extraversion, openness to experience, and optimism may facilitate growth (Tedeschi & Calhoun, 1996). Automatic and intrusive ruminative thoughts about the stressful event occur, along with self-disclosure through writing, talking, and praying. Self-disclosure is facilitated by a strong network of supportive others that serve as a sounding board for individuals to create narratives regarding their experiences, and offer advice and perspectives that individuals can use as they develop new life schemas. The combined influence of automatic thoughts, self-disclosure, and social support act to reduce distress, and lead to more effortful and deliberate attempts at processing the stressful encounter. Deliberate attempts at cognitively processing stress lead to SRG in the form of an increased appreciation for life, better relationships with others, perceptions of greater personal

strength, the identification of new possibilities, and increased spirituality (Tedeschi & Calhoun, 1996). Individuals who achieve SRG also experience changes in life wisdom as their framework for understanding life's paradoxes becomes clearer (Calhoun & Tedeschi, 1999). Finally, Tedeschi and Calhoun (2004) emphasized that the occurrence of SRG does not necessarily indicate the absence of distress. Indeed, even in the face of SRG, some enduring distress may be expected following severe life traumas.

At the heart of the functional-descriptive model of SRG is the role played by cognitive processing in the growth process. Some studies have found that attempts to "work through" stressful events lead to SRG (Calhoun, Cann, Tedeschi, & McMillan, 2000). Park and Fenster (2004) found partial support for a model of growth in which cognitive processing leads to SRG in college students. Intrusive thoughts about the stressor significantly predicted SRG, though avoidance of reminders regarding the stressful event did not. Overall, cognitive processing accounted for only 5% of the variance in SRG. Although more support was found for coping processes as the primary mechanism through which growth occurs, it seems that individuals' struggles to integrate new information from a stressful event into previously existing schemas is an important piece of the SRG process (Park & Fenster, 2004; Tedeschi & Calhoun, 1995). The functional-descriptive model of SRG may have applications for athletes that suffer a severe injury, "choke" in an important competition, or lose their spot in the starting lineup, as athletes in these stressful situations are likely to engage in ruminative activity surrounding the stressor (Tripp, Stanish, Ebel-Lam, Brewer, & Birchard, 2007), and rely on various sources of social support in order to make sense of the event and construct new goals and assumptions about their sport experience (Bianco & Eklund, 2001).

Joseph and Linley's (2005) Organismic Valuing Theory

Although Tedeschi and Calhoun's (2004) model does offer a thorough explanation of how SRG may occur in individuals that suffer stress, they do not account for *why* individuals would be drawn toward growth (Joseph & Linley, 2005). Based on previous models of both SRG and PTSD, Joseph and Linley suggested that any theory of growth must account for four principles: (a) the drive for completion, (b) assimilation versus accommodation, (c) meaning, and (d) hedonic and eudaimonic traditions.

Similar to the functional-descriptive model, the organismic valuing theory (OVT) of growth is set in motion by a stressful event that shatters individuals' assumptions about the world. OVT holds that it is human nature for individuals to make an active attempt to positively accommodate stressor-related information, or in other words, to have a *drive for completion.* Attempts to accommodate the new information are difficult, and bring about intrusive and avoidant thoughts (i.e., rumination). At the point in which rumination about the stressful event has ceased, individuals must either assimilate or accommodate the new information into their previously existing schemas. *Assimilation* is characterized by a return to prestress levels of functioning without any changes to individuals' schemas, and is the result of a failure to cognitively engage with the stressor (e.g., "I'm injured, but I don't like to think about it."). Individuals who assimilate information are more vulnerable to future adversity. *Accommodation* may be either positive or negative. Positive accommodation of the stressor indicates that pre-existing schemas have been altered to allow for new information, and is facilitated by the fulfillment of the basic needs of competence, autonomy, and relatedness (Ryan & Deci, 2000). Positive accommodation of schemas is an indicator of SRG (e.g., "I feel like I can better relate to

my coach because of my injury"). If the three basic needs are *not* fulfilled, negative accommodation of the new information may occur. Although prestress schemas have changed, the changes are not consistent with SRG (e.g., "I cannot play again because I am afraid of getting reinjured"). Some support for the role of need satisfaction in recovering from sport stress has been found in a study of injured athletes (Podlog & Eklund, 2006).

Throughout the process of rumination and accommodation, individuals are forced to consider the meaning of the stressful event (Joseph & Linley, 2005). According to OVT, following a stressful event, individuals seek to make the event *comprehensible* by gaining an understanding of what happened, how it happened, and why it happened. Later, if and when positive accommodation has occurred, individuals seek to understand the *significance* of the event. They may consider the implications of the stressor for their life philosophy and worldview. Joseph and Linley (2005) maintained that SRG and PTSD are not ends of a single continuum. Rather, the constructs arose from distinct theoretical traditions. PTSD comes from the *hedonic* tradition, in which well-being is characterized by the balance of affective states and life satisfaction (Keyes, Schmotkin, & Ryff, 2002). SRG comes from the *eudaimonic* tradition, in which well-being is characterized by personal strength, meaning and purpose in life, and maturity. The distinction between the two traditions of well-being is significant for SRG, because although individuals who have achieved growth may not feel "improved" according to the hedonic tradition (e.g., feeling happier), they will by definition be wiser, closer to others, and psychologically stronger.

According to Joseph and Linley (2005), individual differences in responses to stress can be explained by one or more of the following four factors: (a) degree of disparity, (b) prior personality, (c) concordance with the organismic process, and (d) poststress social environment. In short, individuals are most likely to achieve SRG when there is a large disparity between their prestress schemas and stress-related information, when their basic needs have been satisfied earlier in life, when they cognitively struggle to integrate stress-related information into previously existing beliefs about the world, and when the poststress social environment is facilitative of need satisfaction.

Christopher's (2004) Biopsychosocial-Evolutionary Theory

Perhaps the most broad-based theory of SRG comes from Christopher (2004), who proposed a biopsychosocial-evolutionary theory (BET) of growth. BET posits that growth is actually the normal response to stress, and that absence of growth or the development of pathology is the result of faulty biological stress responses. Christopher draws from the work of biological and evolutionary psychologists to demonstrate that SRG and PTSD both emerge from the same inherited response to stress and trauma. In both cases, stress causes neural networks to be modified through integration of new information, certain neural connections to die off as a result of competition between neurons for connections, and dominant neural networks to prime brain activity toward certain memories (McFarlane, Yehuda, & Clark, 2002). Christopher contended that symptoms of PTSD are actually the result of the normal stress response gone wrong. When affective neural networks prime brain activity, and too many network connections die off, the result is pathology. However, when cognitive networks prime brain activity,

and experiences of emotional and sociocultural solidarity coexist with perceived environmental threat, SRG occurs. Christopher eloquently stated:

> the positive effects [of stress], such as a stronger, more resilient, and more expansive conception of self, closer and more altruistic relationships with family and other significant persons . . . and more holistic perceptions of reality, are best understood as normal metalearning reconstitutions of the individual's complex, subjective matrix of self, society, and nonhuman environment. (p. 86)

Summary

Three contemporary theories of SRG were offered as potential explanations for the growth process. The functional-descriptive model (Tedeschi & Calhoun, 2004) describes growth as arising from a "seismic event" that shatters individuals life schemas and causes both automatic and deliberate rumination about the stressor. Personality and social support are seen as critical to the process, and growth outcomes may co-occur with increases in wisdom and enduring distress. Joseph and Linley (2004) attempted to improve researchers' understanding of *why* individuals might be motivated to grow in the face of stress in their OVT. Satisfaction of the three basic needs of competence, autonomy, and relatedness, and effortful cognitive engagement with the stressor are seen as necessary for growth to occur. Finally, Christopher (2004) offered his BET of growth from adversity, in which he considered the biological and evolutionary factors for growth versus pathology. Although each theory emphasizes different facets of the growth process, they also share some common principles, and can thus be seen as complimentary, rather than competing theories of SRG.

Challenges in SRG Measurement and Research

Despite advances in SRG research and theory, several challenges still exist regarding the study of growth from adversity. The following sections focus on some of the most important issues facing SRG researchers. The first section addresses the validity of the construct of SRG, including a discussion of illusory versus veridical growth. This is followed by a presentation of different views on the dimensionality and directionality of growth measurement. The final section includes an overview of relevant research design issues, including the advantages of qualitative methods when studying growth.

Validity

One of the most controversial issues surrounding SRG is the validity of both the construct itself, and the instruments that purport to measure growth. As addressed previously, the close relationship between SRG and PRC has been a source of confusion for SRG researchers (Park, 2004). Although evidence suggests that SRG and PRC are separate, yet related constructs (Sears et al., 2003), it can become difficult to distinguish between *efforts* to find positive outcomes in negative events, and actually *experiencing* positive outcomes due to stress.

Another concern related to the validity of SRG is whether the information that is captured through self-report measures of growth is indicative of veridical or illusory growth. Taylor's (1983) cognitive adaptation theory provides a compelling case for why self-reported growth in the face of stress may be no more than an illusion constructed by individuals in order to alleviate their distress. Taylor's research on cancer patients demonstrated that several illusions were present, including the belief that they could control the spread of their cancer, believing that others in a similar situation were worse

off than they actually were (i.e., faulty downward comparisons), and assuming that they knew the cause of their cancer (Taylor, Lichtman, & Wood, 1984). More recently, McFarland and Alvaro (2000) conducted a series of four studies to examine the extent to which reports of growth following stressful events were illusory. The researchers found that (a) victims of stressful events tended to derogate their prestressor selves in such a way that they believed that they were now "better," and (b) victims were more likely than acquaintances of victims to report more growth after traumatic stress versus mild stress. These findings were taken as evidence for growth as at least partly illusory.

Another convincing argument against the validity of SRG was put forth in a series of studies by Frazier and Kaler (2006). The first study compared cancer patients to a matched group of individuals without cancer on measures tapping several commonly cited domains of growth, using the Perceived Benefits Scale (PBS) as the measure of growth. No significant differences were found between the two groups on any of the domains of growth. In the second study, two groups of individuals that had experienced the same type of stressful event (sudden bereavement) were compared on measures of well-being. The first group was comprised of individuals who indicated that something positive had come from their sudden bereavement, and the second group included individuals who indicated that nothing positive had come from bereavement. The analyses revealed no differences between the two groups on well-being. Finally, the third study included an examination of the relationship between scores on a standard measure of SRG and corresponding measures of well-being. Further, a *stress-prime* condition was added in which the participants were provided with a description of the stressful event that they reported in the second study before completing the questionnaires. All analyses

were controlled for participants' scores on the Positive and Negative Affect Schedule to assess whether SRG is merely a reflection of the tendency to be positive. The results showed that the subscales of the PBS were not more strongly related to corresponding measures of well-being than to other measures of well-being. Although these studies provide strong evidence against the validity of self-reported SRG, they did suffer from a variety of limitations, including a lack of distinction between cancer patients who did and did not report growth in Study 1, small sample sizes in Study 2, and the lack of a perfect match between the PBS subscales and measures of well-being in Study 3.

Despite studies supporting the notion of SRG as illusory, there is also evidence that self-reports of growth are veridical. For example, Park et al. (1996) measured growth using the SRGS in 160 college students and their close friends and family. Each student reported on their perceived growth in response to a specific stressful event, and a close friend or relative also reported on their perceptions of the students' growth in response to the same event. No significant difference was found between the scores provided by students and the scores of friends/family, and the scores were significantly correlated (r = .21, $p < .05$). An even higher correlation was found in a study examining the relationship between self-reported SRG in breast cancer patients and their husbands' perceptions of their SRG (Weiss, 2002; r = .51). Tedeschi and Calhoun (1996) examined the relationship between PTGI scores and scores on the Marlowe-Crowne social desirability scale, and found no relationship.

Ransom, Sheldon, and Jacobsen (2008) explored the extent to which growth was reflective of actual versus perceive changes in positive attributes and goal orientation in 83 breast and prostate cancer patients who underwent radiotherapy. The participants

completed the personal attribute rating scale (PARS) and the aspirations index (AI) both before (Time 1) and after undergoing radiotherapy (Time 2). At Time 2, the participants also completed the PTGI, and attempted to duplicate their Time 1 responses on the PARS and AI. Two ANOVAs with planned comparisons revealed that the participants recalled reporting more positive attributes than they actually had at Time 1, and recalled reporting a more intrinsic goal orientation than they actually had at Time 1. Finally, regression analyses revealed that actual changes in goal orientation and perceived changes in positive attributes significantly predicted SRG. These findings suggest that self-reports of SRG may be indicative of both veridical *and* illusory changes in positive personal characteristics.

The construct validity of SRG was recently examined in a study of 163 female community residents (Weinrib, Rothrock, Johnsen, & Lutgendorf, 2006). The participants were asked to write an essay about a stressful event that had occurred to them in the past 3 years, and then complete the PTGI in response to this same stressor. The essays were rated by four independent raters who were not informed of the hypotheses of the study. The raters assessed growth using a Likert-type scale ranging from 1 *(no growth)* to 3 *(substantial growth)* on each of three domains: (a) overall SRG, (b) greater appreciation of relationships, and (c) spiritual growth. A significant positive relationship was found between the PTGI scores and the independent raters ratings of growth on all three domains (r = .35-.41). Further, PTGI scores were not correlated with scores on the social desirability or negative mood, but were positively correlated with positive mood. The authors took these findings to indicate that responses on the PTGI were not motivated by

self-presentation concerns, that growth was not merely indicative of a lack of distress, and that growth is an adaptive response to stress (Weinrib et al., 2006).

Smith and Cook (2004) used an experimental design to investigate whether reports of growth on the PTGI were positively biased. A diverse sample of adults were administered both the PTGI and the Traumatic Stress Schedule (TSS). The TSS is a measure of the occurrence of a traumatic event in individuals' lives. Using random assignment, one group was administered the PTGI first and the TSS second. These individuals were instructed to respond to the PTGI items in relationship to how they felt that they had generally changed over the last 4 years (i.e., unlinked method). The second group was administered the TSS first and the PTGI second. This group was instructed to respond to the PTGI items in relationship to a specific stressful event that had occurred over the past 4 years (i.e., linked method). A 2 (method) X 2 (trauma vs. no trauma) MANCOVA with age as the covariate and the five subscales of the PTGI as the dependent variables was conducted. A main effect of method for the New Possibilities subscale was found, such that individuals in the unlinked condition reported more growth than individuals in the linked condition. Additionally, interaction effects showed that for the unlinked group only, individuals who had experienced a traumatic event reported more growth in the areas of personal strength and relating to others than individuals who had not experienced a traumatic event. Based on these results, the authors suggested that individuals who are asked to respond to items on the PTGI in relation to specific stressful events may actually *under*estimate, rather than overestimate growth as previously suggested.

Although most researchers are interested in *actual* positive changes that take place individuals following stress and adversity, some posit that efforts to try and discern the "truthfulness" of growth are futile (Tennen & Affleck, 2002). Park and Lechner (2006) suggested that it may be perceptions of growth, rather than actual growth, which have a positive impact on mental and physical well-being. The use of longitudinal research designs in which individuals are measured on a given construct both before and after a stressful event, informant reports of growth, and improved assessment strategies (i.e., behavioral measures of growth) are some ways in which the validity of the construct of SRG, and the instruments that purport to measure it, can be established (Park & Lechner, 2006).

Dimensionality

A second challenge in SRG research is whether growth should be measured as a unidimensional or a multidimensional construct. The fact that different measures of SRG contain different numbers of factors highlights the confusion surrounding the dimensionality of growth. Of the two most widely used SRG instruments, the SRGS includes 50 items that are purported to load on one factor, and the PTGI includes 21 items that load on five factors corresponding to the domains of growth previously discussed (Park et al., 1996; Tedeschi & Calhoun, 1996). Further compounding the issue of dimensionality is the fact that different numbers and patterns of factors have been found for the same SRG instrument (e.g., Armeli et al., 2001; Roesch, Rowley, & Vaughn, 2004). Janoff-Bulman (2004) affirmed that not only is growth multidimensional, but that different models can be used to understand each dimension. In short, he suggested that a model of strength through suffering can be used to understand the

personal strength and new possibilities domains of growth, a model of psychological preparedness can be used to understand any of the five domains, and a model of existential reevaluation can be used to understand the appreciation of life, relating to others, and spiritual change domains of growth. In contrast to notions of multidimensional growth, Nolan-Hoeksema and Davis (2004) believe that multi-item and multidimensional measures of SRG tend to overestimate the amount of growth that individuals experience, and instead rely on a single-item assessment of SRG. The number of dimensions underlying growth is likely a reflection of the characteristics of the sample, the type of stressor experienced, and the length of time since the occurrence of the stressor (Cohen, Cimbolic, Armeli, & Hettler, 1998). In light of the equivocal nature of the dimensionality of SRG, it would seem that researchers should be mindful that the number and pattern of factors will vary based on the nature of their study.

Directionality

Most SRG theorists acknowledge that the experience of growth does not necessarily indicate the absence of distress. Further, individuals may feel a sense of personal *loss* rather than growth in one or more areas following a stressful event (Baker, Kelly, Calhoun, Cann, & Tedeschi, 2008; Joseph et al., 1993). Thus, a major criticism of current measures of SRG such as the SRGS and PTGI are the reliance on positively worded items. For example, participants completing the PTGI are instructed to indicate the degree to which they have experienced the corresponding change on a 1 (*no change*) to 5 (*great deal of change*) scale. The instructions are followed by 21 items, each of which presents a change that participants may have experienced in response to a stressful event such as, "I discovered that I was stronger than I thought I was." It may be that

responses on traditional measures of growth are positively biased due to the total reliance on positively worded items in the absence of corresponding negatively worded items such as, "I discovered that I was weaker than I thought I was" (Tomich & Helgeson, 2004).

In light of the problems with using positively worded items to measure growth, Armeli et al. (2001) developed a revised version of the SRGS (the RSRGS). The authors reworded each item from the original SRGS to provide neutral statements (e.g., "My belief in how strong I am"). For each neutrally worded item, participants responded on a scale from 1 (*greatly decreased*) to 7 (*greatly increased*). Confirmatory factor analysis revealed that the RSRGS had a seven factor solution, and the factors demonstrated adequate internal consistency reliability.

Despite the development of the RSRGS, other researchers have been slow to adopt neutrally worded items when measuring growth. Calhoun and Tedeschi (2006) questioned the usefulness of assessing negative change on measures of SRG:

> If the content and format of current measures of stress-related growth are not contaminated by social desirability, if responses tend to be corroborated by others, if there is no evidence that inquiring about positive changes on these scales leads to a "positive response bias," and if there are a wide array of measures of the negative aftermath of crisis, what is gained by creating a new scale? (pp. 20-21)

Research Design

Along with validity, perhaps the biggest challenge for SRG researchers lies in designing studies that are capable of answering the desired research questions regarding growth in the aftermath of stress. Most studies of growth have been cross-sectional, and have not been able to fully address the process of growth across time, including the time frame for growth, changes in personal resources, and the factors that predict long-term

growth from stress. A few recent studies have tracked SRG across time. Most recently, Wolchick, Coxe, Tein, Sandler, and Ayers (2008) investigated the cognitive appraisals and coping strategies that predicted SRG several years following the death of a parent in 50 adolescents and young adults.

Although longitudinal studies represent advancement over isolated assessments of growth and growth-related variables, prospective designs, in which individuals are measured on several relevant personal variables both *before* and after a stressful event occurs, provide the most complete picture of growth. Prospective designs allow researchers to search for actual self-reported changes in personal resources, rather than rely on participants to retrospectively assess the degree of change that they have experienced. Park and Fenster (2004) used a prospective design to examine changes in optimism, religiousness, and mastery over a 6-month time period in 139 college students. The participants completed measures of personal resources at Time 1, and 6 months later completed the same measures, along with the SRGS in relation to their most stressful experience in the previous 6 months. SRG was moderately related to increases in religiousness ($r = .21$) and mastery ($r = .20$), but not optimism. Despite the small effect size of the correlations, the authors suggested that these findings were promising given the stable nature of the constructs measured. Further, they posited that personal resources may have been further strengthened over a longer time frame. Despite some use of prospective designs in the study of SRG, this type of research is still a rarity. Prospective studies of growth are difficult to conduct for specific stressful events, as researchers must identify individuals to study before the event has occurred. Researchers who wish to use

prospective designs would be wise to first identify a high-risk group for a given stressful event (e.g., pitchers in baseball for a study on SRG following a shoulder injury).

Another design choice that researchers have when studying SRG is whether to use quantitative or qualitative methods. As discussed in previous sections, many researchers "discovered" the phenomenon of SRG during qualitative studies of individuals' experiences with stressful encounters (e.g., Kennedy, 1976; Malinak et al., 1979). Following the creation of SRG instruments such as the PTGI and SRGS, many researchers justifiably turned to quantitative research designs in order to examine complex relationships between SRG and the psychosocial and sociodemographic factors previously discussed.

Despite advancements in the quantitative inquiry of SRG, qualitative research has continued. It is only through qualitative methods such as interviews that researchers can gain a richer understanding of the contexts, trajectories, and personal experiences of SRG (Massey et al., 1998; Woodward & Joseph, 2003). Researchers have used interviews to understand individuals' SRG experiences from childhood abuse (Woodward & Joseph), spinal cord injury (Sanghee & Youngkhill, 2008), HIV bereavement (Cadell & Sullivan, 2006), and surviving a stroke (Gillen, 2005).

Some researchers have combined quantitative measures with qualitative interviews to gain a more complete understanding of SRG (e.g., Cadell & Sullivan, 2006; Davis, Wohl, & Verberg, 2007). One useful strategy for combining quantitative and qualitative methods is to administer a valid and reliable quantitative measure of SRG, and based on the scores, select individuals who reported either low or high growth for in-depth follow-up interviews. Researchers can assess the relative amount of growth

reported by individuals in response to a given stressful event using quantitative measures, and gain a better understanding of individuals' thoughts, emotions, and beliefs about their experience using qualitative methods. Cadell and Sullivan used this approach to explore SRG in 15 bereaved caregivers of people with HIV/AIDS. Seven caregivers were chosen for interviews based on high scores on the PTGI, and 8 caregivers were chosen based on low to moderate scores. The authors found that even the 8 individuals who scored low on growth as measured by the PTGI reported some positive changes in their interview. The authors suggested that the PTGI may not have been presented in a way that adequately captured the caregivers' growth experiences, or perhaps that growth had occurred in the time period between the completion of the questionnaire and the interview. The complimentary nature of quantitative and qualitative research makes mixed-methods approaches to the study of SRG a promising research design strategy for future studies.

Summary

Researchers who wish to explore SRG face a variety of methodological challenges. The validity of SRG has been called into question, as perceptions of growth may be guided by positive illusions, and individuals may unknowingly derogate their former selves when assessing growth from stressful encounters (McFarland & Alvaro, 2000; Ransom et al., 2008). The dimensionality of SRG remains equivocal, as some researchers have reported a single factor structure to measures of growth, and others have reported as many as seven dimensions (Armeli et al., 2001; Park et al., 1996). Directionality is another issue when measuring SRG. It may be that reports of growth are biased due to the positive wording of most growth scale items (Tomich & Helgeson, 2004). Finally, an overreliance on cross-sectional data has left many questions regarding

the process and timeline of SRG unanswered (Cohen et al., 1998). The use of prospective and mixed-methods designs offer promise for uncovering both the product and the process of SRG.

Psychological Stress in Sport

Sport psychology researchers have long realized the powerful impact of psychological stress on the performance and well-being of competitive athletes (e.g., Gould, Horn, & Spreeman, 1983; Gould, Jackson, & Finch, 1993; Scanlan & Passer, 1979; Scanlan et al., 1991; Thelwell, Weston, & Greenless, 2007). A review of relevant studies on stress in sport is offered in the following sections. First, the evolution of sport stress research from controlled laboratory studies to in-depth qualitative studies is discussed. Second, overviews of research examining specific stressors that athletes may struggle with such as injury, transition, and burnout are offered. Finally, the recent literature focused on organizational stress in high-level athletics is summarized, including a consideration of the unique organizational stressors faced by intercollegiate athletes.

Sport Stress Research

The study of stress in sport has a rich and multifaceted history. Although an exhaustive review of the literature on stress in sport is beyond the scope of this chapter, a brief overview of the evolution of this line of research will be helpful in understanding how SRG may be an important construct to consider for future studies of stress in sport. Early studies of sport stress were heavily influenced by the works of endocrinologist Hans Selye, and psychologists Joseph McGrath and Charles Spielberger, all of whom developed conceptual models of stress prior to the 1970s (see Gill, 1994). Studies

conducted by Martens and Landers (e.g., Martens & Landers, 1970) in the early to mid-1970s were important in advancing researchers' understanding of the stress-motor performance relationship. In accordance with the zeitgeist, most research conducted on sport stress from the 1970s to the early 1980s was in the form of laboratory studies focused on the relationship between state anxiety and performance (e.g., Martens, Gill, & Scanlan, 1976; Martens & Landers, 1970; Pemberton & Cox, 1981; Weinberg & Ragan, 1978).

Scanlan and Passer (1978, 1979) extended the study of stress in sport outside of the laboratory. In two studies of competitive stress in male and female youth sport competitors, they found that pregame competitive stress (as measured by Spielberger's State Anxiety Inventory for Children) was most strongly predicted by high competitive trait anxiety, low self-esteem, low team performance expectancies, and high basal state anxiety for both boys and girls. For boys only, personal performance expectancies predicted additional variance in pregame competitive stress. For both boys and girls, postgame stress was most strongly predicted by the actual outcome of the game. Higher stress was evident following a loss than following a win. Gould et al. (1983) assessed sources and predictors of stress in 458 elite junior wrestlers. The results showed that performing up to one's ability, improving on one's last performance, and participating in championship meets as the three most frequent sources of stress. Using principal components analysis, the 33 items used to examine sources of stress were found to form three factors: (a) fear of failure-feelings of inadequacy, (b) external control-guilt, and (c) social evaluation. Scores on the sport competition anxiety test (SCAT) and years of wrestling experience contributed a significant amount of the variance in fear of failure,

and SCAT scores also significantly predicted social evaluation stress. Although their findings did reveal some sources of stress as being cited more frequently than others, Gould et al. emphasized the fact that considerable individual differences in stress sources existed.

Thus, early studies of psychological stress in sport revealed a multitude of stress sources for youth and adolescent athletes, and showed that competitive stress was influenced by both intrapersonal factors such as trait anxiety, and situational factors such as objective performance outcomes (Gould et al., 1983; Scanlan & Passer, 1978; Scanlan & Passer, 1979). Although some sources of stress emerged as more prominent than others, there was also uniqueness between athletes. Despite a growing body of knowledge regarding stress in youth athletes, little research conducted during the 1970s and 1980s focused on the stress experiences of adult athletes. Further, noncompetitive sources of stress for athletes of all ages were largely ignored. Two notable qualitative studies conducted in the early 1990s addressed both of these gaps in the sport stress literature.

Scanlan et al. (1991) conducted face-to-face interviews with 26 former high-level figure skaters regarding the sources of stress that they experienced during their skating career. The interviews were inductively analyzed to produce five major themes representing the sources of stress reported by the skaters: (a) negative aspects of competition, (b) negative significant-other relationships, (c) demands or costs of skating, (d) personal struggles, and (e) traumatic experiences. The aforementioned study was particularly noteworthy in that it was the first sport psychology study to employ in-depth interviews as the primary method of data collection. The use of open-ended interviews, as opposed to closed-ended questionnaires, allowed the athletes a greater influence in

determining the sources of stress that were most salient for them, and provided them with a platform to describe their experiences in rich detail.

Using similar qualitative procedures, Gould, Jackson, and Finch (1993) attempted to verify the findings of Scanlan et al. (1991) in phone interviews with 17 former national champion figure skaters. The researchers identified the sources of stress experienced by skaters both before and after winning their first national championship. Six major themes emerged describing the sources of stress experienced by skaters before winning their first national title: (a) high performance standards based on expected potential, (b) environmental demands on skater resources, (c) competitive anxiety and doubts, (d) stress related to significant others, (e) physical demands on skater resources, and (f) uncategorized stress sources (Gould et al., 1993). For the time period after winning their first national championship, seven major themes emerged: (a) relationship issues, (b) expectations and pressure to perform, (c) psychological demands on skater resources, (d) physical demands on skater resources, (e) environmental demands on skater resources at the elite level, (f) life-direction concerns, and (g) uncategorized stress sources. These findings support the findings of Scanlan et al. (1991), show that elite athletes experience stress from both competitive and noncompetitive sources, and that differences exist between elite athletes' stress sources (Gould et al., 1993).

Both the Scanlan et al. (1991) and Gould, Jackson, and Finch (1993) studies contributed to sport psychologists' understanding of the multifaceted nature of both competitive and non-competitive stress in elite-level adult athletes. Their work has influenced others, as multiple qualitative investigations on the sources of sport stress have affirmed and expanded upon the aforementioned studies in a variety of athletic

populations (e.g., Giacobbi, Foore, & Weinberg, 2004; Kimball & Freysinger, 2003; Noblet & Gifford, 2002; Thelwell et al., 2007). Beyond exploring the general stress experiences of athletes, researchers have also focused on a number of specific stressful events common to the sport environment. Three of these events are discussed in the subsequent sections.

Injury

Perhaps the most pervasive stressor that competitive athletes of all levels face is physical injury. According to a review by Brandenburg, Butterwick, Hiemstra, Nebergall, and Laird (2007), injury rates in popular American sports such as football and soccer range from 3 to 140 injuries per 1000 hours of exposure. Not surprisingly, the psychological consequences of athletic injury and rehabilitation have been extensively studied by sport psychologists.

Various models have been used to describe the injury and rehabilitation process of athletes. One of the most widely used models is Kubler-Ross's (Kubler-Ross, 1970) Grief Model, which was first used to describe the cycle of emotions experienced by those with terminal illnesses (see Udry, Gould, Bridges, & Beck, 1997). The grief model breaks down the emotional responses of those athletes who have experienced injury into five sequential stages: (a) denial, (b) anger, (c) bargaining, (d) depression, and (e) acceptance. Although many other such stage models of athletic injury have been proposed, it has been argued that these models fail to account for individual response differences (Quinn & Fallon, 1999). Cognitive appraisal models attempt to alleviate this concern. At the heart of appraisal models is the premise that the way in which athletes view their injuries ultimately influences their subsequent behavior during the process of rehabilitation

(Anderson et al., 2004; Tracey, 2003). An integrated model of injury response has been used to emphasize the cyclical nature of this process, as well as the interaction among personal factors, situational factors, and cognitive appraisal of the injury in determining ones' response to the injury and the subsequent physical and psychosocial outcomes (Wiese-Bjornstal et al., 1998).

Smith, Smoll, and Ptacek (1990) used a resilience perspective to investigate the conjunctive and disjunctive influence of moderator variables on the relationship between negative life events and athletic injury in high school athletes. A conjunctive pattern of moderating variables was described as a situation in which these variables needed to occur together and in a particular combination in to order exert an influence on the negative event-injury relationship, and a disjunctive pattern referred to a situation in which moderating variables acted independently to influence this relationship. In the case of those athletes made vulnerable to injury by stressful life events, a conjunctive relationship between coping skills and social support was found to account for 22-30% of injury variance. For those athletes classified by Smith et al. as "resilient," or showing no relation between life stress and injury, coping skills and social support had disjunctive influences on this relationship. The results of this study suggest the need to not only acknowledge the independent influence of multiple moderating protective and vulnerability factors when examining the relationship between sport adversity and outcome, but the possibility that these moderating variables act together in a conjunctive fashion.

Magyar and Duda (2000) examined the influence of goal orientation, social support, and sources of rehabilitation confidence on the confidence restoration of college

athletes. They found that performance sources of confidence, namely mastery and demonstration of ability, were predictive of confidence restoration at the midpoint of the rehabilitation process. By the day before the athlete was to return to action, vicarious experience had additionally contributed to confidence restoration. Further, it was found that athletes who perceived more social support with regards to the rehabilitation process were more likely to rely on performance sources of confidence on the path to confidence restoration than those who did not.

Although injuries can cause a great deal of stress for athletes, the above-mentioned study shows that athletes are quite capable of regaining lost personal resources following injury. Other research has revealed that some athletes perceived not only regaining prior resources, but gaining additional positive attributes as a result of injury (e.g., Podlog & Eklund, 2006; Udry, Gould, Bridges, & Beck, 1997). Studies showing perceived psychological growth from sport injuries are discussed in more detail later in this chapter.

Burnout

A second stressor that competitive athletes may experience results from the sometimes harsh demands of the sport environment. *Burnout* can be defined as "a state of physical, emotional, and mental exhaustion caused by long-term involvement in situations that are emotionally demanding" (Pines & Aronson, 1988, p. 9). Maslach and Jackson (1981) proposed burnout as being indicative of any of three maladaptive outcomes: (a) emotional exhaustion, (b) depersonalization, and (c) reduced personal accomplishment. Originally studied in individuals involved in helping professions such as police officers and social workers, sport researchers soon recognized the relevance of

burnout for coaches, athletes, officials, and athletic trainers (e.g., Gould, Tuffey, Udry, & Loehr, 1996; Gould, Udry, Tuffey, & Loehr, 1996; Hjalm, Kentta, Hassmenan, & Gustaffson, 2007; McLaine, 2005). Upon the development of a sport-specific burnout measure, sport devaluation replaced depersonalization as a dimension of burnout for athletes (Raedeke & Smith, 2001).

Smith (1986) forwarded the first theoretical explanation of athlete burnout in sport. The model outlines the relationships among situations, cognitive appraisals, physiological responses, and the behavioral responses that characterize burnout. The model begins with a situation likely to put athletes at risk for burnout. This might include high or conflicting demands, low social support, low autonomy, low rewards, or boredom. Such situations lead to cognitive appraisals, which are the thoughts that mediate the relationship between situations and responses. Athletes vulnerable to burnout might perceive that they are overloaded, lack control, feel helpless, and feel a lack of meaning in their activity. These appraisals lead to physiological responses such as tension, anger, depression, insomnia, and illness. The model indicates a reciprocal relationship between physiological responses and cognitive appraisals, as not only do appraisals lead to these responses, but the responses themselves reinforce the appraisals (Smith, 1986). Finally, the physiological responses that occur as a result of cognitive appraisals bring about the behavioral consequences of burnout. Rigidity, decreased performance, interpersonal difficulties, and eventual withdrawal from sport were all proposed as behavioral consequences of burnout. Although Smith's model provided a starting point for the systematic study of burnout in athletes, researchers later addressed

potential problems with this conceptualization of burnout in sport, and proposed alternatives to his model.

Schmidt and Stein (1991) proposed a sport commitment model of burnout. In this model, athletes who remain involved with sport for a long period of time may do so because they genuinely enjoy the sport, or because they feel a high investment and low alternatives (Schmidt & Stein). The latter would be at-risk for burnout, as in addition to high investment and low alternatives, these individuals perceive decreasing rewards, increasing costs, and decreasing satisfaction with regard to sport. According to Schmidt and Stein, alternatives and investments are what distinguish those who burn out from those who merely "drop out" of sport. Although burned out athletes perceive high investment and few alternatives, those who drop out are easily able to leave sport because they perceive a variety of alternatives, along with a decreasing investment in sport. The commitment model of athletic burnout provides an attractive alternative to Smith's (1986) model, in that it takes into account the level of investment that athletes feel toward their sport.

Although Goodger, Gorely, Lavallee, and Harwood (2007) acknowledged several other conceptual models of athlete burnout, including Silva's (1990) training stress syndrome, and Tenenbaum, Jones, Kitsantas, Sacks, and Berwick's (2003) failure-adaptation model, significant advances in the study of burnout in sport using a motivational perspective have been made in the past 4 years (e.g., Hodge, Lonsdale, & Ng, 2008; Lemyre, Hall, & Roberts, 2008; Perrault, Gaudreau, Lapointe, & Lacroix, 2007). In sum, it appears that athletes whose needs of competence, autonomy, and relatedness have been met, and who have an adaptive motivational profile (e.g., high task

orientation, perceptions of a mastery climate, low parental criticism, low concern about mistakes, high perceived ability) are less likely to suffer burnout (Hodge et al., 2008; Lemyre et al., 2008). Burnout is an interesting phenomenon when considering the possibility of SRG in sport, as the dimensions of sport burnout seem to represent psychological *regression* due to sport stress rather than psychological growth. Perhaps SRG and burnout represent alternative outcomes to the stressful sport environment.

Transition

A third stressful event that many athletes encounter is transition. Schlossberg (1981) defined transition as "an event or nonevent that results in a change in assumptions about oneself and the world and thus requires a corresponding change in one's behavior and relationships" (p. 5). Typical transitions faced by athletes include being "cut" from a team, being injured, and retirement from sport (Pearson & Petitpas, 1990). Although the majority of transition research in sport has focused on voluntary and involuntary retirement (e.g., Sinclair & Orlick, 1993), a recent study examined the transition into elite sport for adolescent ice hockey players (Bruner, Munroe-Chandler, & Spink, 2008).

Wylleman and Lavallee (2004) put forth a developmental model of athlete transition. The model consists of four layers: (a) athletic, (b) psychological, (c) psychosocial, and (d) academic-vocational. Within each layer, individuals must negotiate 3-4 developmental transitions across the lifespan of their sport career. For example, athletes entering college sport would most likely face the challenge of negotiating the following developmental transitions for each of the four layers: (a) athletic mastery, (b) adulthood, (c) relationships with coaches and significant others, and (d) higher education. Studies have indeed shown that freshman student-athletes perceive the transition to

college as stressful. In a qualitative study of the transition from high school to university for 16 track and field athletes, Tracey and Corlett (1995) found that the athletes described themselves as feeling overwhelmed, unsure of academic or athletic expectations, lonely, isolated, and having a heightened sense of independence. In a similar study, Giacobbi et al. (2004) used group and individual interviews with 5 female freshman swimmers in order to examine the percieved stressors of these athletes. The swimmers reported feeling stressed as a result of training intensity, high performance expectations, interpersonal relationships, being away from home, and academics. Within this study, the researchers also noted that the athletes used positive reinterpretation as a means of coping with the stress of being a first-year student-athlete. It might be interesting to examine the extent to which athletes in transition perceive actual positive change as a result of their struggles.

Organizational Stress

Although many athletes may never experience a serious injury, feelings of burnout, or a major transition, some argue that the sport environment itself is inherently stressful. A recent series of investigations have targeted the structure of sporting organizations as major sources of stress for competitive athletes. *Organizational stress* is defined simply as "work-related social psychological stress" (Shirom, 1982, p. 21). In sport, organizational stress represents the interaction between sport "workers" and the sporting organization within which they work (Woodman & Hardy, 2001). Organizational stressors operating in the sport environment might include role conflict, coach conflict, training demands, and performance evaluation.

An initial exploration of organizational stress in sport was conducted by Woodman and Hardy (2001) with 15 elite British athletes. In-depth interviews with each

athlete revealed the following four themes: (a) environmental issues (e.g., selection, finances), (b) personal issues (e.g., injury, goals and expectations), (c) leadership issues (e.g., coaches, coaching styles), and (d) team issues (e.g., team atmosphere, roles). Another study conducted by Fletcher and Hanton (2003) revealed similar findings. Interestingly, the results of another qualitative study indicated that organizational stress may be more potent than performance stress for elite athletes (Hanton, Fletcher, & Coughlan, 2005). Despite the negative connotation of a term such as "organizational stress," the sport psychology researchers have been prudent to note that such stressors are not necessarily detrimental to performance, and in some cases may even be beneficial (Fletcher & Hanton, 2003; Woodman & Hardy, 2001).

The study of SRG in connection with a construct such as organizational stress represents a departure from much of the SRG literature. It is only recently that SRG researchers have begun to recognize the growth-producing potential of stressful occupations such as those of emergency medical technicians, police officers, and fire fighters (Paton, 2005; Shakespeare-Finch, Gow, & Smith, 2005). SRG researchers have often taken a rather narrow approach to stress, such that most theoretical conceptions of SRG are based on growth following isolated traumas such as chronic disease, bereavement, accident, or disaster. Although Tedeschi and Calhoun (2004) stated that their model of growth applies only to individuals who have experienced severe trauma, they also suggested that growth may occur under less severe circumstances, albeit through different pathways. Indeed, college students have reported growth in response to such seemingly benign stressors as relationship problems, academic issues, and moving away from home (Park et al., 1996).

Intercollegiate athletes are a subpopulation that has been identified as facing a variety of institutional and organizational stressors (Kimball & Freysinger, 2003; Tracey & Corlett, 1995; Wilson & Pritchard, 2005). Although student-athletes do not necessarily experience *more* stress than their nonathlete peers, they do experience unique sources of stress such as balancing academics and sport (Wilson & Pritchard, 2005), being stigmatized by classmates and instructors as "dumb jocks" (Simons, Bosworth, Fujita, & Jensen, 2007), and feeling a lack of control over their decisions (Kimball & Freysinger, 2003). Given the contentions that SRG occurs in student nonathletes, that growth may take place through pathways other than isolated severe trauma, and that athletes may realize benefits as a result of organizational stress, it would seem that SRG is a fruitful construct to explore in intercollegiate athletes.

Summary

The study of stress in sport has expanded from the lab to the field, and now includes a focus on noncompetitive as well as competitive stressors. Qualitative methods have become more common as researchers attempt to understand the unique sources of stress for competitive athletes, and the ways in which they experience these stressors. Intercollegiate athletes represent an ideal subpopulation within which to explore SRG, as not only do they face adversities such as injury, burnout, and transition, but also operate within the confines of a stressful organizational framework.

Significance of the Study of SRG in Sport

Most athletes and coaches are familiar with the concept of overload. With regard to physical conditioning, *overload* is a training principle referring to the practice of introducing progressively more intense training stimuli (e.g., more weight, more complex movements, more volume, less rest) into athletes' training programs in order to induce positive physiological adaptations and improved performance (Baechle & Earle, 2008). Although not entirely equivalent, the process of physiological overload has served as an analogy for describing the occurrence of SRG (see Janoff-Bulman, 2004). That is, exposure to taxing life circumstances may bring about positive psychological adaptations. In light of the many stressors that competitive athletes face, perhaps consideration should be given to the possibility of *psychological* overload due to sport stress. In the following sections, rationale for the study of SRG in competitive athletes is provided through three sources: (a) anecdotal, (b) empirical, and (c) conceptual.

Anecdotal Evidence for SRG in Competitive Athletes

In modern competitive sports, athletes are revered for their ability to "bounce back" from setbacks and adversity. Several high-profile athletes have noted feeling strengthened as a result of stressful life and sport experiences. Perhaps the most famous example of SRG in sports is the case of cyclist Lance Armstrong. A diagnosis of testicular cancer in 1996 seemingly marked the end of what looked to be a promising career for Armstrong (Montville, 1999). When the cancer spread to his lungs and brain, Armstrong's life was in doubt. However, his treatment was successful, and Armstrong miraculously returned to competitive cycling in 1998. He would go on to win his first Tour de France in 1999, and followed that victory by wining the next *six* Tour de France

races. Armstrong chronicled his triumph over cancer, as well as the lessons that he learned in his 2000 book, *It's Not About the Bike*. In an editorial for *Forbes* magazine, Armstrong (2001) declared:

> Without cancer, I never would have won a single Tour de France. Cancer taught me a plan for more purposeful living, and that in turn taught me how to train and to win more purposefully. It taught me that pain has a reason, and that sometimes the experience of losing things--whether health or a car or an old sense of self--has its own value in the scheme of life. Pain and loss are great enhancers. (p. 64)

Armstrong is not the only athlete to have claimed growth from hardship. Former professional basketball player Randy Livingston had this to say regarding being relegated to the NBA's developmental league after several seasons in the NBA:

> If I wasn't getting hurt and I was a superstar at the next level, I don't know if I would have been as humble and appreciative of a lot of things, maybe I wouldn't care about helping the young guys out. Maybe I wouldn't care about the game as much because I had so much athletic ability. (Thomsen, 2008, p. 43)

Former U.S. diver Laura Wilkinson broke her foot in training 5 months before the 2000 Olympic Games. She would ultimately win the gold medal in the 10-meter platform dive, but Riach (2005) suggested that Wilkinson may have achieved more than a medal:

> When it was over, Wilkinson had indeed lost nothing and gained much – including perspective. "I knew that I just wanted to dive because I loved it. I wanted to win a gold medal, but I knew that if I didn't, it wasn't the end of the world." (p. 31)

Although anecdotal tales of SRG as told by athletes in the popular media are in no way "scientific," they do demonstrate that some athletes perceive growth as a result of sport and nonsport adversities. However, it is only through carefully constructed empirical investigations that researchers can fully understand the nature of SRG in competitive athletes.

Empirical Evidence for SRG in Competitive Athletes

Although to date no sport psychology studies have been conducted that specifically focus on SRG, some researchers have found evidence for perceptions of growth in athletes following adversity. Udry et al. (1997) conducted interviews with 21 elite skiers who had suffered season-ending injuries in the past 4 years. One of the purposes of the study was to explore whether the skiers perceived any positive benefits as a result of their injuries. Surprisingly, 20 of the 21 skiers reported at least one benefit from their injury. The identified benefits formed three themes: (a) personal growth benefits, (b) psychologically based performance enhancements, and (c) physical/technical developmental benefits. Although the athletes identified benefits that were consistent with the literature on SRG (e.g., gained perspective, personality development), several sport-specific growth indicators were discussed (e.g., increased confidence, enhanced motivation, ski technically better). The Udry et al. study was the first to offer scientific evidence for the experience of SRG in athletes following sport adversity, though it would not be the last.

Podlog and Eklund (2006) conducted a longitudinal investigation of athletes' return to sport from an injury. Twelve injured athletes were interviewed 2-3 times each over an 8-month period in order to explore their experiences from the time that they resumed training with teammates until 6 to 8 months postreturn. Similar to the Udry et al. (1997) study, Podlog and Eklund found that 10 of the 12 athletes identified benefits to their injury. Upon returning to competition, positive consequences such as having a new perspective on sport and a renewed passion for playing were noted by several of the athletes. One difference in the findings between the Udry et al. and Podlog and Eklund

studies was that the athletes in the latter study did not identify any nonsport benefits from their injuries. This finding may be more a reflection of a disparity in interview questions than actual differences between the athletes, as Podlog and Eklund specifically asked athletes about "mental, physical, or technical benefits," whereas Udry et al. asked the skiers if there were "*any* benefits to being injured." Despite this difference, Podlog and Eklund added further scientific evidence to the occurrence of SRG in competitive athletes.

Most recently, Galli and Vealey (2008) adopted a resilience perspective in exploring 10 high-level athletes' responses to adversity in sport. Similar to the aforementioned studies, Galli and Vealey used qualitative methods to understand athletes' experiences with stress and adversity in sport. However their investigation differed from the aforementioned studies in that the athletes were asked to identify the "most difficult adversity that they had ever had to overcome as an athlete?" Thus, although injuries were identified by several of the participants, other adversities were also discussed, including moving away from home, performance slumps, and illness. Similar to the findings of Udry et al. (1997), the athletes cited a number of nonsport-related positive outcomes as a result of their most difficult adversity. Positive outcomes included learning, gaining perspective, gaining a realization of social support, gaining a motivation to help others, and feeling overall strengthened and improved. This study provided the most comprehensive view of positive growth from sport adversity to date, and highlighted the need for more in-depth investigations of SRG in athletes.

Conceptual Arguments for SRG in Competitive Athletes

A final rationale for the study of SRG in sport is grounded in the views of scholars who view sports as a site for personal development in athletes of all ages. Perhaps the most well known conceptual argument for SRG in sport comes from the longstanding dilemma of whether sports build "character" in youth. Although the exact qualities that constitute "character" remain a point of contention, attributes such as responsibility, respect, and sportspersonship are commonly focused on traits in programs that seek to build character in youth through sports and physical activity (e.g., Hellison, 2000). Sport participation offers a unique venue through which children may be exposed to important moral values and beliefs (Larson, 2000). Although early studies of moral development in sport revealed that male athletes often operated at a lower level of morality in sports than outside of sports, when delivered appropriately, sports and physical activity may serve to build positive character traits (Bredemeier & Shields, 1986; Solomon, 1997). According to Solomon, by introducing certain "moral dilemmas" into the physical activity experience, educators may be able to pair the development of motor skills with the development of character. If we consider moral dilemmas in sports to represent stressful encounters, character development may be a prime indicator of SRG in young athletes.

Danish et al. (1992) introduced a developmental-educational intervention model of sport psychology. Central to this model is the notion that crises (i.e., critical life events) that take place for athletes should be seen as opportunities for growth and development rather than threats to well-being. Danish et al. argued that instead of trying to prevent crises from happening, sport psychologists should seek to provide athletes with

the tools necessary to deal constructively with critical life events so that they may achieve personal growth from them. The authors maintained that strong counseling skills, knowledge of effective goal setting practices, and the ability to teach athletes skills that will transfer from sport to life, are all characteristics of practitioners who are capable of promoting growth in athletes following critical life events.

Miller and Kerr (2002) presented an athlete-centered model of sport psychology, in which personal excellence is achieved as a result of the sport experience. They argued that for too long performance excellence has been pursued at the expense of personal development, and that life skills programs for athletes should be more closely intertwined with their actual sport involvement. When viewed from an athlete-centered perspective, sport is a site for learning important life skills in addition to performance skills. Thus, the constant barrage of stressors in the form of injuries, transitions, burnout experiences, organizational stress, and moral dilemmas may serve as important "teaching tools" for athletes of all ages.

Summary

Although most coaches and athletes know of the concept of physiological overload, they are likely less familiar with SRG, which may be thought of as a type of *psychological* overload. Statements from high-profile athletes, empirical evidence in the form of qualitative inquiry, and conceptualizations of the role of sport in the development of important character traits and life skills all provide rationale for the focused study of SRG in athletes.

Study Purpose

The purpose of this study was to gain an understanding of SRG in Division I intercollegiate athletes. An explanatory mixed methods design was employed. After an initial quantitative phase, qualitative data served as a follow-up to obtain more in-depth responses about SRG in Division I intercollegiate athletes (Creswell, 2005). In the quantitative phase, the PTGI (Tedeschi & Calhoun, 1996) was used to assess the frequency of SRG in a sample of Division I athletes from the state of Utah. Athletes who reported at least a moderate degree of growth were selected for the second phase. Semi-structured interviews were conducted in order to explore sport-induced SRG in athletes. The second phase helped the researcher to better understand how Division I athletes achieved growth as a result of their stressful sport experiences.

CHAPTER 3

METHOD

An exploratory approach using both quantitative and qualitative methodologies was used to gain an understanding of the incidence and experience of SRG in Division I athletes. Creswell and Plano Clark (2007) defined mixed methods research as a "method that focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies" (p. 5). Mixed methods research builds on the strengths of both quantitative and qualitative research by allowing researchers to assess both outcome and process (Creswell, 2005; Greene & Caracelli, 1997).

Sport psychology professionals have called for the increased use of mixed methods research as a way to advance the field and bridge the gap between academic and applied sport psychologists (Giacobbi, Poczwardowski, & Hager, 2005; Scanlan, 2007). Although somewhat rare in sport psychology research, a mixed methods approach has been used to study burnout in youth tennis players (Gould et al., 1996; Gould et al., 1996), fear of failure (Conroy, Poczwardowski, & Henschen, 2001; Conroy, Willow, & Metzler, 2002), and the psychological characteristics of Olympic athletes (Gould, Dieffenbach, & Moffett, 2002). As Creswell and Plano Clark (2007) stated, "the premise of mixed methods inquiry is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach

alone" (p. 5). The following section includes a discussion of the type of the mixed methods design chosen for this study.

Mixed Methods Design

An explanatory mixed methods design was used in the present study. The traditional explanatory design is characterized by an emphasis on quantitative data collection and analysis (Creswell, 2005). In the present study, quantitative data served as a compliment to qualitative data, which was the central method used to learn about SRG (Morgan, 1998). Specifically, a participant selection model was adopted, in which quantitative data were used to identify and purposefully select participants for an in-depth qualitative interview (Creswell & Plano Clark, 2007). Significant predictors, demographic information, or nonsignificant results may be used as a basis for selecting cases for more in-depth qualitative study (Creswell & Plano Clark). In the case of this study, questionnaire data was used to identify and purposefully select a subsample of athletes who reported at least a moderate degree of SRG in response to a sport stressor. These athletes were given the opportunity to participate in follow up interviews to respond to questions about the process by which SRG occurs in sport. Using Morse's (1991) system for classifying mixed methods designs, this study can be illustrated by the notation: quan → QUAL.

The following sections include a discussion of the participant selection criteria, measurement instruments, data gathering procedures, and data analysis for the quantitative phase of the study. This is followed by a focus on sampling, measurement, procedures, and analysis for the qualitative phase of the study.

Quantitative Phase

The quantitative phase of the study was used to answer the first three research questions: (a) How much SRG do athletes report in response to sport stressors? (b) What is the relationship between stressor factors and SRG? and (c) What differences (e.g., sex, race, sport) exist between athletes on SRG? The quantitative phase allowed the researcher to identify the athletes that met the inclusion criterion for the qualitative phase of the study.

Participants

A convenience sample of 319 athletes from Salt Lake and Utah County were surveyed for the quantitative portion of the study. A sample size nomogram developed by King (1978) was used to find an appropriate sample size for this study. The nomogram indicated that this sample size is sufficient to ensure a sampling error not greater than 5%. E-mail and face-to-face meetings with individuals in the Department of Exercise and Sport Science at the University of Utah, the Utah Sports Research Network, and the Athletic Departments at the University of Utah, Utah Valley State University, and Brigham Young University, were used to promote the study. With the support of these gatekeepers, the researcher attended class sessions, practices, and other organized meetings in order to invite athletes to participate in the study. Participants were at least 18 years of age and currently competing in sport at the Division I, national, international, or professional level.

Although the original intent of the study was to sample professional, Olympic, and Division I athletes, the former groups proved difficult to access. Following data

collection at all sites, 95% of the participants were Division I performers. Thus, for the sake of clarity, the 15 Olympic and professional level athletes were eliminated from the sample. Further, three athletes that circled either all "0's" or all "5's" on the PTGI were removed from the sample. Another athlete was removed from the data file upon meeting with the researcher for the qualitative phase of the study, and informing him that the answers she provided on the questionnaire were not valid. Finally, upon cross checking the informed consent documents with the three athletic department websites, one participant was found to be the team manager rather than an athlete on the team. This participant was deleted from the sample.

The final sample included 299 Division I athletes (*M* age = 20.29, *SD* = 1.59). More women (*n* = 214) participated in the study than men (*n* = 85). Further, the sample consisted of mostly Caucasian athletes (*n* = 254), followed by athletes that identified their race as being "Other" (*n* = 15), African American athletes (*n* = 8), Asian American athletes (*n* = 7), Hispanic athletes (*n* = 7), Polynesian athletes (*n* = 6), and Native American athletes (*n* = 2). The athletes represented a variety of sports, including track and field (*n* = 92), cross-country (*n* = 36), basketball (*n* = 29), gymnastics (*n* = 25), baseball (*n* = 25), softball (*n* = 22), soccer (*n* = 18), tennis (*n* = 17), swimming (*n* = 12), skiing (*n* = 9), volleyball (*n* = 5), golf (*n* = 4), wrestling (*n* = 4), and diving (*n* = 1). The athletes were quite experienced in their primary sport (*M* = 9.81 total years played, *SD* = 4.71).

The stressor listed by each athlete was coded deductively based on the five sources of stress found by Scanlan et al. (1991) in their qualitative study of elite figure skaters. Using their findings as a guide, each athlete's stressor was coded as one of six

possible stressor types: (a) negative aspects of competition (e.g., "competing in my first big invitation meet"), (b) negative significant other relationships (e.g., "when my coach doesn't give me a chance"), (c) demands/costs of sport (e.g., "classes interfering with meets and practices"), (d) personal struggles (e.g., "recovery from an injury that occurred during the season"), (e) traumatic experiences (e.g., "death of my sister two years ago"), and (f) other (e.g., "when friends get injured"). Stressors from the "personal struggles" category were most often (n = 141) cited by athletes as their most difficult sport stressor in the last 3 years, followed by "negative aspects of competition" (n = 87), "demands or costs of sport" (n = 35), "negative significant-other relationships" (n = 29), "other" (n = 4), and "traumatic experiences" (n = 3). Of the 298 athletes that responded, 160 (53.5%) were currently experiencing their stressor, and 138 (46.2%) were no longer experiencing their stressor.

Measures

Demographics, Stressor, and Cognitive Appraisal Questions

Participants completed a three-part questionnaire regarding their demographics, a particular stressor that they had experienced in sport, and their cognitive appraisals of this stressor. First, participants answered questions regarding their date of birth, sex, race, primary current sport, total years playing their primary current sport, and competitive level.

Following the demographic questions, participants were asked to indicate the biggest sport stressor, or most stressful event (positive or negative), that they had experienced in their sport in the past 3 years. Although some SRG researchers have participants reflect on only 1 year (Park et al., 1996), other participants reflected upon the

last 5 years (Tedeschi & Calhoun, 1996). The use of the former time frame makes it less likely that athletes will have experienced a significant sport stressor, whereas the use of the latter time frame introduces the potential for more recall bias. Based on the shortcomings of using a shorter or a longer time frame, a 3-year time frame was seen as the best compromise for this study. Participants were then asked whether they were currently experiencing the stressor, and if not, how long ago the stressor ended. They were further asked how long the stressor lasted, how many times before had they ever experienced a similar stressor, and how many individuals they knew who had ever experienced a similar stressor.

The final six questions addressed primary and secondary cognitive appraisals made by the athletes, and were measured on a scale from 1 (*Not at all*) to 7 (*Extremely/ Completely*). Example questions included, "How successful were you in coping with this stressor," and "To what extent has this stressor been resolved?" Similar questions were used by Park et al. (1996) as a way to gather more information regarding the participants' perceptions of stressful experiences, and to search for potential relationships between cognitive appraisals and SRG. Please see Appendix A for the complete questionnaire.

Stress-related Growth

Tedeschi and Calhoun's (1996) Posttraumatic Growth Inventory (PTGI) was used to measure SRG. Items for the PTGI were developed based on previous studies of individuals' experiences with trauma, and interviews with individuals who had suffered traumatic life events (Tedeschi & Calhoun, 2004). The PTGI contains 21 Likert-type items measured on a scale from 0 (*I did not experience this change as a result of my*

stressful event) to 5 (*I experienced this change to a very great degree as a result of my stressful event*). All items were answered in reference to the biggest stressor that athletes had experienced in the past 3 years. The items were summed and divided by the total number of items to form a total PTGI score (minimum score = 0, maximum score = 5), as well as five subscale scores. The five subscales are: (a) relating to others, (b) new possibilities, (c) personal strength, (d) spiritual change, and (e) appreciation of life. An example item from the relating to others subscale is, "I better accept needing others." An example item from the new possibilities subscale is, "I developed new interests." An example item from the personal strength subscale is, "I know better that I can handle difficulties." An example item from the spiritual change subscale is, "I have a stronger religious faith." An example item from the appreciation of life subscale is, "I can better appreciate each day." Although the PTGI was designed based on individuals' experiences with traumatic life events (e.g., death of a loved one, disease), researchers have recently suggested that the instrument is also suitable to measure SRG in individuals who have not necessarily experienced trauma (Anderson & Lopez-Baez, 2008).

Tedeschi and Calhoun (1996) tested the reliability and validity of the PTGI in a sample of college students. Adequate internal consistency was found for the total PTGI ($\alpha = .90$), as well as the subscales of relating to others ($\alpha = .85$), new possibilities ($\alpha = .84$), personal strength ($\alpha = .72$), and spiritual change ($\alpha = .85$). The internal consistency for the appreciation of life subscale was slightly lower ($\alpha = .67$) than the standard of .7 suggested by Nunnally (1978). Internal consistency for the overall PTGI in the present study was .94.

Concurrent and discriminant validity were examined by testing the relationship between scores on the PTGI and scores on the NEO Personality Inventory and Marlowe-Crowne Social Desirability Scale. The PTGI was positively related to optimism, extraversion, openness to experience, agreeableness, and conscientiousness, and unrelated to neuroticism and social desirability (Tedeschi & Calhoun, 1996). Finally, construct validity of the PTGI was demonstrated by comparing PTGI scores of individuals who reported severe trauma with scores of individuals who experienced no trauma. Individuals who reported experiencing trauma scored significantly higher than individuals who reported no trauma on all subscales of the PTGI except spiritual change. This finding indicates that perceptions of growth in response to stressful events likely represent more than self-enhancing thinking (Fiske & Taylor, 1991). Please see Appendix B for the full PTGI.

Procedure

Upon approval from the Institutional Review Board, athletes completed the study questionnaire packet previously discussed. The principal investigator administered surveys for individuals, small groups, and teams in an effort to provide convenient times and location options for participants. The researcher educated participants about the study guidelines, and the participants were given a statement of informed consent to read and sign prior to completing the questionnaires. The entire process took approximately 5-10 minutes per participant.

Analysis

All analyses were conducted using SPSS version 14.0. Box plots, histograms, scatter plots, frequency tables, and descriptive tables were examined for outliers, missing data, and nonnormality. Four of the variables (i.e., "Approximately how long ago did the stressor end?" "Approximately how long did the stressor last?" "How many times before had you ever experienced a similar stressor?" and "How many people do you know who have ever experienced a similar stressor?") were excluded from all analyses, as more than 15% of the cases had missing values (Hertel, 1976). Mean imputation based on each participant's subscale mean was conducted for missing items on the PTGI (Newton & Rudestam, 1999). Several variables were substantially skewed (i.e., skewness coefficient > 1.96 or < -1.96), and power transformations were used to produce a normal distribution for these variables. Upon identifying outliers from the box plots and frequency tables, the specific cases containing the outlying values were inspected. In cases where a data entry error was made, the researcher used the raw data to correct the value. In cases where it was determined that the outlying value did indeed represent a valid response from the participant, the value was left unchanged. Descriptive statistics were calculated in order to summarize the demographic characteristics of the sample. Athletes' average total PTGI score were used to answer research question one, "How much SRG do athletes report in response to sport stressors?"

Multiple linear and binary logistic regression analyses were used to answer research question two, "What is the relationship between stressor factors and cognitive appraisals, and SRG?" and research question three, "What differences exist between athletes on SRG?" The six stressor type levels (i.e., "negative aspects of competition,"

"negative significant other relationships," "costs/demands of sport," "personal struggles," "traumatic experiences," and "other") were effect coded into five new variables (Munro, 2005). Specifically, the first five stressor type levels became categorical independent variables. For example, all athletes whose most stressful sport event related to the negative aspects of competition received a "1" on the newly created variable "negative aspects of competition," and a "0" on the remaining four new variables. The same coding pattern was followed for all of the remaining stressor type levels, with the exception of "other." The 4 athletes that cited a sport stressor in the "other" category received a "-1" for all five variables. In contrast to dummy coding, effect coding allowed for the coefficients of each of the five stressor type variables to be interpreted in relation to the grand mean, as opposed to mean of the excluded group (i.e., "other"). The stressor type variable "traumatic experiences" was not included in any analyses, as only 3 athletes identified a traumatic experience as their most difficult sport stressor. Athletes were categorized as being either an individual ("0") or a team ("1") sport athlete, and as being either of racial minority ("0") or nonracial minority status ("1").

The 16 demographic, stressor-related, and cognitive appraisal variables were entered into the regression model in a hierarchical fashion, based on Schaefer and Moos' (1992) conceptual model of SRG. Specifically, the predictors were entered into the model in three blocks: (a) demographic variables (e.g., age, sex, race, sport type), (b) stressor factors (e.g., type of stressor), and (c) cognitive appraisal variables (e.g., control, awareness). The Mahalanobis D^2 value was evaluated to search for multivariate outliers (Newton & Rudestam, 1999). Although 4 multivariate outliers were found ($p < .001$), upon further evaluation the researcher determined that these participants' responses were

within an acceptable range and should remain in the dataset. A histogram of the residuals revealed multivariate normality (Munro, 2005). Evaluation of the bivariate correlations, as well as the tolerance and variance inflation factor (VIF) for each independent variable revealed no problems with multicollinearity (Munro, 2005). The Durbin-Watson statistic indicated independence of observations ($d = 2.19$). Finally, the Homoscedasticity assumption was tested by plotting the standardized predicted values against the residuals (Munro, 2005). The plot showed that the model was a good fit for these data. Because similar results were obtained when the analysis was conducted with the transformed variables, only the analysis with the nontransformed variables will be reported for ease of interpretation (Newton & Rudestam, 1999).

A dichotomized version of athletes' total PTGI score was calculated for use in a binary logistic regression. Specifically, athletes whose average total PTGI score was less than three were labeled as the "little to no growth" group, and athletes whose average total PTGI score was three or higher were labeled as the "moderate to large amount of growth" group. Similar to the procedures used for the multiple linear regression, the 16 predictor variables were entered into the model hierarchically, beginning with demographic variables, continuing with stressor factors, and finishing with cognitive appraisal variables. Further, predicted probabilities for each athlete were computed. Model fit was tested using the Hosmer-Lemeshow Goodness of Fit test (Hosmer & Lemeshow, 1989).

Qualitative Phase

Paradigm

Paradigms act as guides for the ways that individuals approach research (Morrow & Smith, 2000; Ponterotto, 2005). A given paradigm informs researchers' assumptions of ontology (the nature of reality), epistemology (how we understand reality), axiology (what is valued), and methodology (how we find out about reality). An interpretivist paradigm guided the exploration of sport-induced SRG in the present study. From an interpretivist perspective, reality is a function of individual perspective. That is, reality is only "objective" to the extent that individuals experience, process, and label it as such (Sciarra, 1999). Thus, in order to understand the reality of SRG in high-level athletes, the researcher engaged in discussions with the interviewees regarding the actual, real-life SRG experiences of athletes (Schwandt, 2000).

Participants

Consistent with an explanatory design-participation selection model, the results of the quantitative phase of the study were used to identify several athletes who met inclusion criteria for interview participation (Creswell & Plano Clark, 2007). Using criterion sampling (Patton, 2002), athletes who averaged a score of at least three (i.e., a moderate degree of growth) were invited for the qualitative phase of the study.

Lincoln and Guba (1985) recommend sample selection "to the point of redundancy" (p. 202). Sample selection should cease when cases provide no new information regarding the experience of SRG. Sample size in qualitative research ranges from a sample of one in a case study, to a sample of 50 in a phenomenological study (Sandelowski, 1995). Because the researcher minimized phenomenal variation between

the participants by only selecting athletes who indicated at least a moderate degree of growth, and minimized demographic variation by drawing from a sample of high-level athletes in Utah, it was expected that information redundancy could occur quickly (Sandelowski, 1995). Thus, a minimum sample size of 8 athletes was initially estimated for the current study. Upon completion and analysis of 8 interviews, 3 additional interviews were conducted in an attempt to fully saturate all categories, bringing the final sample to 11 athletes. Only athletes who met the previously identified criteria were invited for an interview. Sample selection began with the athletes who scored closest to the maximum average of five (a total score of 105) on the PTGI, and continued with athletes whose average scores approached three (a total score of 63).

Forty-three athletes (39 females and 4 males) both agreed to be interviewed on the initial consent form, and met the criterion score of at least a three on the PTGI. The researcher sent a mass e-mail to all 43 athletes, and followed up with e-mails and phone calls to individual participants. Although 12 individual interviews were conducted, the decision was made to drop one of the interviews due to the athlete expressing that she did not agree with the answers that she had provided on the PTGI. Thus, the final qualitative sample consisted of 11 Division I athletes (*M* age = 20.82, *SD* = 1.67).

The ratio of men to women was similar to the quantitative phase (8 women, 3 men). Six of the participants were Caucasian, 1 of the participants was African American, 1 of the participants was Mauritian, 1 participant was Asian American, and 1 participant was half Caucasian and half Native American. The sample was comprised of 4 cross-country runners, 3 track and field athletes, 2 swimmers, 1 gymnast, and 1 softball player. As compared to the entire sample of college athletes in this study (*M* PTGI score = 2.70,

SD = 1.05), the 11 athletes perceived a high amount of SRG (*M* PTGI score = 3.96, *SD* = .63). Please see Table 1 for a complete description of the qualitative sample of athletes. Each interview took place on the campus of the university that the athlete attended, in a private, quiet location (e.g., library, study room, classroom). Pre-interview rapport building, study introduction, and informed consent ranged from 5-10 minutes. The individual interviews lasted approximately 30-45 minutes each, and upon consent from the participants, were audio-recorded using a digital recorder.

Following the completion of the study, participants were thanked for sharing their insights and for taking the time to participate. Further, they were provided with the contact information of the researcher should they have had further questions or concerns, and given a chance to ask questions about the study and engage in further discussion about the interview topic. Postinterview debriefing time ranged from 10 to 30 minutes. Participants were contacted at a later time to discuss the researchers' analysis and findings.

Researcher as Instrument

The researcher as an active participant in the process of data collection represents a major departure from positivistic or postpositivistic research. Whereas quantitative researchers seek objectivity in the search for truth, qualitative researchers value the thoughts, beliefs, and experiences that researchers bring with them to a study. Because most qualitative research is grounded in paradigmatic traditions that reject the notion of a singular reality waiting to be discovered, researchers necessarily become an important part of the process of making meaning from interactions with participants (Guba &

Table 1

Descriptive Information for the Athletes in the Qualitative Phase of the Study (n = 11)

Name	Age	Ethnicity	Sport	Years of Playing Experience	Stressor	*M* PTGI Score
Haley	19	Caucasian	Track and Field	4	Car accident	4.10
Joe	18	Caucasian	Cross-Country	3	Lack of time	3.14
Charlot	21	Caucasian	Cross-Country	6	Chronic depression	4.95
Norah	18	African American	Track and Field	6	Poor performance	3.00
Ryan	22	Caucasian	Track and Field	1	No scholarship	4.24
Janet	23	Mauritian	Track and Field	4	Changing sports	4.52
Nicole	19	Caucasian	Swimming	13	Overall demands of sport	3.43
Frank	22	Caucasian and Native American	Cross-Country	3	Stress fracture	4.71
Leyla	22	Asian American	Gymnastics	16	Expectations	4.06
Blakely	21	Caucasian	Softball	16	Torn rotator cuff	3.67
Olga	20	Caucasian	Swimming	12	Balancing school and sport	3.81

Note. Pseudonyms have been used to protect the anonymity of the participants. Mean PTGI scores can range from 1 (*No Change*) – 5 (*Great Change*).

Lincoln, 1994). Further, the desire for in-depth understanding of a particular phenomenon often calls for the researcher to take an insider's perspective, and literally become a part of the population under study (Morrow & Smith, 2000). For qualitative researchers, the issue is not one of objectivity, but of being keenly aware of preconceived notions that they have regarding the phenomenon under study and attempting to "bracket" these notions in such a way that they are free to focus fully on important aspects of the phenomenon (Gearing, 2004). Heshusius (1994) argued that even bracketing of researcher's presuppositions will not lead to a fuller understanding of the experiences of participants, and that researchers should attempt to form a participatory consciousness by "merging" the thoughts and experiences of themselves and their participants.

Personal Background

My interest in SRG developed from personal experiences with stressors and challenges as a friend, a student, and an athlete. As an avid sports fan and participant, I have been fascinated with athletes who are able to successfully rebound from injury, illness, or slumps in performance. My own experiences with stress as an athlete serve to shape my assumptions about SRG in competitive athletes. Media portrayals of "resilient" athletes, and research on resilience and SRG add to my assumptions regarding the personal, environmental, and sociocultural antecedents and consequences of growth in athletes. Perhaps the largest influence on my assumptions regarding SRG in athletes comes from prior qualitative research that I have conducted on resilience in this population. Through my conversations with athletes regarding overcoming adversity, and my time spent analyzing these conversations, I developed a sense for what I believe to be the "resilience experience" of these athletes.

Despite my assumptions, I possess strengths that aided my ability to accurately interpret what athletes say. First, although my assumptions add bias to my interpretations, they also served to inform me, and thus allowed me to more effectively engage with my participants. Second, I brought past qualitative research experience to the current study. I have completed two graduate courses on qualitative research methods and analysis, participated in several qualitative research studies, and completed a qualitative master's thesis.

Although I view my prior knowledge and subjectivity as strengths, I took measures to ensure that my subjectivity served to support rather than inhibit my ability to complete this research. A self-reflective journal and peer research team were two strategies employed. I used a journal to write new or surprising findings, major changes in the way that I view the phenomenon of SRG in athletes, problems that may arise during the interviews, and advice for future research.

In addition to a self-reflective journal, I also participated in a peer research team during the process of data collection and analysis. The research team was formed as a way for researchers to gain support from and share the research process with others who conduct similar research. The team met approximately once per month for 1 to 2 hours, and consisted of other graduate students who conduct qualitative research.

Sources of Data

One procedure used by many qualitative researchers to ensure a rigorous and credible study is triangulation (Creswell & Miller, 2000). Triangulation refers to the use of multiple data sources, methods, investigators, and theories as a means to achieve results that are trustworthy (Creswell, 1998). Field notes taken both during and following

the interviews were examined in conjunction with the interview transcripts in order to enhance the researcher's understanding of each interview. As a check of the credibility of the findings, the researcher e-mailed the transcribed interviews and the results to each participant so that they had a chance to comment on the results or clarify any misinterpretations made by the researcher. Each data source is discussed in more detail in the following sections.

Interviews

Prior to the interview, participants were briefed regarding the nature of the study. The first few minutes of the interview are crucial for building trust and helping participants to feel comfortable in the interview situation (Kvale, 1996). The rapport between the interviewer and interviewee must be based on an unconditional positive regard for the interviewees regardless of what they might say (Patton, 2002). A rapport was established by letting athletes know from the beginning why they were chosen as participants, and by making it clear that they were considered to be an important and interesting source of knowledge with regard to understanding SRG in sport. By creating a relationship where knowledge is understood to be "value-free," it was hoped that participants would feel comfortable in openly and honestly describing their experiences. During this time, the researcher invited any questions, comments, or concerns that participants may have had regarding the interview. The researcher also reminded participants that the interview would be audio taped in order to best capture their perceptions. Each participant read and signed a statement of informed consent.

Following the briefing session, in-depth semistructured interviews were conducted with each participant. The semistructured approach allows for the interview to

flow as a conversation and for the interviewees feelings to guide the interview, but within the framework of an interview protocol that has been predetermined (Kvale, 1996). An interview guide (see Appendix C) composed of seven interview questions was used to ensure that all major concepts regarding SRG were addressed. Example questions included, "You identified (state the stressor identified by the athlete in phase one) as your biggest sport stressor in the past three years. Can you describe this stressor to me?" and "In what ways, if any, do you feel that you have changed as a result of this stressor?" The researcher made use of various types of questions (e.g., introducing, follow-up), and probes in order to best understand the experiences of participants (Kvale, 1996).

A debriefing session took place following each interview. After a long discussion in which participants have given much of themselves, this was a time for them to receive something in return (Kvale, 1996). If participants were interested, the researcher shared more detailed information regarding the study and how their experiences would be used to advance knowledge in the field of sport psychology.

Field Notes

Field notes were taken both during and after each interview. During the interview, the researcher made note of key points discussed by the participants. Note-taking is an essential part of the interview for four reasons: (a) to aid the interviewer in formulating new questions, (b) to allow for unexpected themes to emerge so that these might be touched upon in future interviews, (c) to facilitate data analysis, and (d) to act as a backup in case of a tape-recorder malfunction (Patton, 2002). Upon the conclusion of the interview the researcher reflected upon these notes as well as the written transcripts in order to write his initial reactions to the interview. These reactions assisted recall of the

content of each interview upon data analysis. Because of the importance of remaining actively engaged in the interview process, the researcher positioned field notes to the side opposite the participant (S. Morrow, personal communication, April 2007).

Immediately following each interview, the researcher reviewed the field notes, reflected on the interview experience, and completed a contact summary (Kvale, 1996). A contact summary is a single sheet with several focusing or summarizing questions about a particular field contact (Miles & Huberman, 1994). The perspective needed for the contact summary combines immediacy of the just completed interview with a reflective overview of what went on in the contact. In short, the contact summary captures thoughtful impressions and reflections prior to the more formal coding and data analysis. Specifically for this study, the researcher noted stressors identified by athletes, major issues or themes regarding growth, target questions to add or delete, and any other specific observations/reflections about each particular interview and/or interviewee (See Appendix D).

Participant Checks

Following the transcription and analysis of each interview, the researcher returned to participants in order to ensure that his interpretations match their perceived experiences. Lincoln and Guba (1985) consider this the most critical procedure for establishing the trustworthiness of data. Participant checks took place over e-mail, during which time participants were provided with a copy of their interview transcript, and the final themes derived from all interviews, and asked to check for any discrepancies between their experiences and my interpretations. If participants disagreed with the analysis, or have additional insights regarding the study, the researcher returned to the

data to make any necessary adjustments based on the insights of participants. At this time, the athletes were also asked to provide a pseudonym that could be used to protect their anonymity for any publications and presentations that may arise out the study.

Data Analysis

Audio recordings of the interviews were downloaded and transcribed verbatim into a word processor by the primary investigator. The transcripts were imported into the Atlas.ti qualitative data analysis software for ease of identification and organization of codes and categories from the interview transcripts.

A general inductive approach was used to analyze the data. Inductive analysis involves "detailed readings of raw data in order to derive concepts, themes, or a model through interpretations made from the raw data by a researcher" (Thomas, 2006, p. 238). The purpose of the general inductive approach is threefold: (a) condense raw data into a brief summary format, (b) establish clear links between the research objectives and the summary findings derived from the data, and (c) develop a framework for the underlying structure of experiences that are evident in the data (Thomas, 2006). A similar approach has been used by sport psychology researchers to examine risk among adventure racers (Schneider, Butryn, Furst, & Mascucci, 2007), moral reasoning in young athletes (Long, Pantaleon, Bruant, & d'Arripe-Longueville, 2006), and team building (Dunn & Holt, 2004). The general inductive approach to qualitative data analysis is similar to grounded theory, but with less emphasis on the development of a theory from the data (Strauss & Corbin, 1998).

In order for the researcher to glean a firm grasp of the content and experiences discussed in each interview, the process of analysis began with a close reading of each

interview transcript (Thomas, 2006). Next, the researcher assigned codes to segments of text that seemed important given the objectives of the study (Miles & Huberman, 1994). In this study, the researcher coded segments of text that related to athletes' experiences with SRG, including personal characteristics, environmental resources, sociocultural influences, and indicators of growth. These codes were created either using the words of the researcher, or using the actual words of the participants, a process known as *in vivo coding* (Strauss & Corbin, 1998). Related codes were grouped to form initial categories. Similar categories were combined to reduce overlap and redundancy among the categories. Throughout the process of coding and categorizing, the researcher used memos as a way to record thoughts, questions, and directions for further data collection. This process continued until the data was adequately summarized in three to eight overarching categories (Thomas, 2006). Criteria adapted from Bowen (2008) were used to decide whether a category was adequately saturated. First, the category must have been reflected in more than 70% of the interviews (i.e., eight or more interviews). Second, the category must have been confirmed in participant checks with the athletes. Finally, the category must have made sense given prior research on SRG and/or the stress experiences of competitive athletes. The final categories were used to create a preliminary model illustrating competitive athletes' perceptions of SRG in response to sport stressors.

Trustworthiness

Standards of quality and verification in qualitative research have been of concern to many researchers (see Eisner, 1991; LeCompte & Goetz, 1982; Lincoln & Guba, 1985). Those unfamiliar with the paradigmatic traditions that characterize qualitative

research may question the validity and reliability of studies that attempt to "create theory," "explain experience," or "describe a culture." In response to the skepticism of positivistic scholars, several authors have proposed alternative standards for evaluating the quality of qualitative research. For example, Lincoln and Guba (1985) offered parallel terms for the concepts of internal validity, external validity, reliability, and objectivity. These terms are credibility, transferability, dependability, and confirmability. The overall quality of a qualitative study is often referred to as *trustworthiness*. Triangulation of data sources, a self-reflective journal, participation in a peer research team, independent parallel coding, and an audit trail were used to ensure the trustworthiness of this study.

As previously described, triangulation refers to the use of multiple data sources, methods, investigators, and theories as a means to achieve results that are trustworthy (Creswell, 1998). Individual interviews, participant checks, and field notes were the data sources used for triangulation in the present study. Further, the researcher noted his thoughts, ideas, and struggles in a self-reflective journal, and participated with other graduate students in a peer research team. Members of the team acted as an external audit by examining the process and the product of the study (Creswell, 1998). Members also acted as a "devil's advocate" by asking the researcher hard questions and keeping him honest throughout the process of the study (Lincoln & Guba, 1985). Based on the study objectives and raw data, one member of the research team independently created a set of categories that best describe the data (Thomas, 2006). The independent coder had extensive experience in participating in and conducting qualitative research. The categories created by the two researchers were compared as a check of the dependability of the results. In the event that major discrepancies existed, the primary researcher re-

evaluated his analysis in light of the discrepant findings. Finally, a detailed account of data collection and analysis procedures (e.g., duration of interviews, recruitment, initial and changing conceptualizations of codes) was kept in an audit trail (see Appendix E) as a final method of enhancing the credibility of the study (Morrow & Smith, 2000).

CHAPTER 4

RESULTS

Quantitative Phase

The quantitative phase of this study was guided by three research questions: (a) How much SRG do Division I athletes report in response to sport stressors? (b) What is the relationship between stressor factors and cognitive appraisals, and SRG? and (c) What differences exist between Division I athletes on SRG? Descriptive statistics were calculated to gain a basic understanding of these data. Secondly, multiple linear and binary logistic regressions were conducted in order to examine relationships, group differences, and the predictive power of the demographic, stressor-related, and cognitive appraisal variables.

Descriptive Statistics

Means and standard deviations were calculated for all continuous independent variables. The athletes reported a small to moderate degree of positive change as a result of their most difficult sport stressor in the last three years ($M = 2.70$, $SD = 1.05$). Less than half (43%) of the athletes reported at least a moderate degree of SRG. The athletes believed that their chosen sport-related stressor was quite stressful when it occurred ($M = 5.50$, $SD = 1.19$), but less stressful currently ($M = 3.12$, $SD = 1.78$). The athletes felt moderately aware ($M = 4.12$, $SD = 2.16$) and in control ($M = 3.47$, $SD = 1.77$) of the

occurrence of their stressor, and reported that their stressor was moderately resolved (M = 4.54, SD = 1.71).

Multiple Linear Regression

Following preliminary data screening, 16 variables were ultimately chosen for entry into the hierarchical regression model. Demographic variables accounted for 4.5% of the variance in SRG (Adj R^2 = .028, $p < .05$). Stressor factors added an additional 8.2% ($p < .001$). Finally, the block of cognitive appraisal variables accounted for 4.8% of the variance ($p < .05$). The final model was significant, F (15, 272) = 3.58, $p < .001$, and accounted for 17.4% (Adj R^2 = .126, $p < .001$) of the PTGI variance. Specifically, being older (sr = .163, β = .180, $p < .01$), being female (sr = -.128, β = -.143, $p < .05$), *not* reporting the most difficult sport stressor in the past 3 years to be related to the negative aspects of competition (sr = -.179, β = -.220, $p < .01$), or negative significant other relationships (sr = -.112, β = -.121, $p < .01$), feeling more stress currently (sr = .137, β = .217, $p < .05$), feeling more in control of the stressor (sr = .112, β = .126, $p < .05$), and feeling that the stressor was more resolved (sr = .113, β = .148, $p < .05$) were related to more SRG (see Table 2).

Binary Logistic Regression

In order to predict the probability that an athlete would perceive SRG, the same 16 variables from the multiple linear regression were entered into a binary logistic regression model. A test of the model with only the demographic variables (i.e., block 1) versus the model with intercept only was statistically significant $\chi^2(16, N = 286) = 54.21$, $p < .001$. Further, the addition of the stressor variables in the second block resulted in a

Table 2

Summary of Hierarchical Linear Multiple Regression Analysis for Variables Predicting Division I Collegiate Athletes' Stress Related Growth ($N = 299$)

Variable		*B*	*SE B*	β
Step 1				
	Sex	-7.95	2.96	-.16**
	Age	2.40	.86	.17**
	Race	-.47	3.59	-.01
	Sport	.69	2.99	.02
	Years Experience	-.37	.31	-.08
Step 2				
	Sex	-7.33	2.98	-.15*
	Age	2.33	.85	.17**
	Race	1.03	3.49	.02
	Sport	1.15	2.95	.02
	Years Experience	-.39	.30	-.08
	Negative Aspects of Competition	-7.90	3.03	-.17*
	Negative Significant Other Relationships	-7.20	4.03	-.11
	Costs/Demands of Sport	10.27	3.81	.16**

Table 2 Continued

Variable		*B*	*SE B*	β
	Still Experiencing	3.34	2.62	.08
Step 3				
	Sex	-6.93	2.98	-.14*
	Age	2.49	.84	.18**
	Race	1.34	3.46	.02
	Sport	2.55	2.96	.06
	Years Experience	-.55	.30	-.12
	Negative Aspects of Competition	-10.10	3.12	-.22**
	Negative Significant Other Relationships	-8.24	4.28	-.12*
	Costs/Demands of Sport	6.98	3.94	.11
	Personal Struggles	-1.27	2.92	-.03
	Still Experiencing	-.06	3.60	-.00
	Stress Intensity	1.26	1.15	.07
	Stress Current	2.68	1.08	.22*
	Coping	.20	.86	.01
	Awareness	.46	.64	.04
	Control	1.56	.77	.13*

Table 2 Continued

Variable	*B*	*SE B*	β
Resolved	1.90	.93	.15*

Note. Step 1 $R^2\Delta = .045$, Step 2 $R^2\Delta = .082$, Step 3 $R^2\Delta = .049$. $F(15, 272) = 3.87$, $p < .001$. Sex – 0 = *Female,* 1 = *Male.* Race – 0 = *Racial Minority,* 1 = *Non-Racial Minority.* Sport = 0 = *Individual,* 1 = *Team.* Stressor Type - Negative Aspects of Competition – 0 = *No,* 1 = *Yes.* Stressor Type - Negative Significant Other Relationships - 0 = *No,* 1 = *Yes.* Stressor Type – Costs/Demands of Sport – 0 = *No,* 1 = *Yes.* Stressor Type – Personal Struggles – 0 = *No,* 1 = *Yes.* Still Experiencing (i.e., "Are you still currently experiencing this stressor?"), 0 = *No,* 1 = *Yes.* Stress Intensity (i.e., "How stressful was this stressor when it occurred?"), scores range from 1 (*Not at all stressful)* to 7 (*Extremely stressful*). Stress Current (i.e., "How stressful is this stressor currently?"), scores range from 1 (*Not at all stressful)* to 7 (*Extremely stressful*). Coping (i.e., "How successful were you in coping with this stressor?"), scores can range from 1 (*Not at all successful*) to 7 (*Extremely successful*). Awareness (i.e., "How aware were you that this stressor was going to occur?"), scores can range from 1 (*Not at all aware*) to 7 (*Extremely aware*). Control (i.e., "How much control did you have over the occurrence of this stressor?"), scores can range from 1 (*No control*) to 7 (*Extreme control*). Resolved (i.e., "To what extent is this stressor resolved?"), scores can range from 1 (*Not at all resolved*) to 7 (*Completely resolved*).

* $p < .05$

** $p < .01$

significant decrease in the -2 log likelihood from block one $\chi^2(5, N = 286) = 27.20, p < .001$. Finally, the addition of the cognitive appraisal variables to the third block resulted in a significant decrease in the -2 log likelihood from block two $\chi^2(6, N = 286) = 16.57, p < .05$. The Nagerkelke R^2 statistic showed that 23.2% of the variance in SRG was accounted for in this model. The model was able to correctly classify 77.2% of the athletes who reported low growth, and 54.8% of the athletes who reported moderate to high growth, for a total success rate of 67.5%.

The logistic regression coefficient, Wald test, and odds ratio for each predictor is presented in Table 3. Sex, sport type, age, years experience, the stressor types "negative aspects of competition," and "negative significant other relationships," perceptions of the current stressfulness of the stressor, and perceptions of the amount of control that they had over the occurrence of the stressor had significant effects. The inverted odds ratio (i.e., 1/Exp (B)) for sex indicates that female athletes were twice as likely as male athletes to report SRG (Exp (B) = .50). The odds ratio for age revealed that for every year increase in athletes' age, the odds of reporting growth increased by 22%. The inverted odds ratio for years of playing experience revealed that for every year decrease in athletes' playing experience, the odds of reporting growth increased by 8% (Exp (B) = .93). Team sport athletes were more than twice as likely as individual sport athletes to report growth (Exp (B) = 2.08). Athletes who did *not* report their most difficult sport stressor in the past 3 years to be related to the negative aspects of competition were 2.5 times more likely to report growth than athletes who did report this type of stressor (Exp (B) = .40). Similarly, athletes who did *not* report their most difficult sport stressor in

Table 3

Summary of Binary Logistic Regression Analysis for Variables Predicting Division I Collegiate Athletes' Stress Related Growth (N = 286)

Variable	*B*	Wald χ^2	Odds ratio
Sex	-.69	4.36*	.50
Sport	.73	5.03*	2.08
Race	.20	.30	1.22
Age	.20	4.53*	1.22
Years	-.07	4.41*	.93
Negative Aspects of Competition	-.92	6.50*	.40
Negative Significant Other Relationships	-1.04	4.50*	.35
Personal Struggles	-.02	.01	.98
Costs/Demands of Sport	.82	3.41	2.26
Still Experiencing	-.09	.06	.91
Stress Intensity	.08	.42	1.09
Stress Current	.32	7.13**	1.37
Coping	.02	.03	1.02
Awareness	.06	.75	1.06
Control	.20	5.93*	1.23
Resolved	.16	2.14	1.17

Note. Sex – 0 = *Female*, 1 = *Male*. Race – 0 = *Racial Minority*, 1 = *Non-Racial Minority*.

Table 3 Continued

Sport = 0 = *Individual,* 1 = *Team.* Stressor Type - Negative Aspects of Competition – 0 = *No,* 1 = *Yes.* Stressor Type - Negative Significant Other Relationships - 0 = *No,* 1 = *Yes.* Stressor Type – Costs/Demands of Sport – 0 = *No,* 1 = *Yes.* Stressor Type – Personal Struggles – 0 = *No,* 1 = *Yes.* Still Experiencing (i.e., "Are you still currently experiencing this stressor?"), 0 = *No,* 1 = *Yes.* Stress Intensity (i.e., "How stressful was this stressor when it occurred?"), scores range from 1 (*Not at all stressful)* to 7 (*Extremely stressful*). Stress Current (i.e., "How stressful is this stressor currently?"), scores range from 1 (*Not at all stressful)* to 7 (*Extremely stressful*). Coping (i.e., "How successful were you in coping with this stressor?"), scores can range from 1 (*Not at all successful*) to 7 (*Extremely successful*). Awareness (i.e., "How aware were you that this stressor was going to occur?"), scores can range from 1 (*Not at all aware*) to 7 (*Extremely aware*). Control (i.e., "How much control did you have over the occurrence of this stressor?"), scores can range from 1 (*No control*) to 7 (*Extreme control*). Resolved (i.e., "To what extent is this stressor resolved?"), scores can range from 1 (*Not at all resolved*) to 7 (*Completely resolved*).

* $p < .05$

** $p < .01$

the past 3 years to be related to negative significant other relationships were nearly three times more likely to report growth than athletes who did report this type of stressor (Exp (B) = .35). For every one point increase on the item assessing athletes' perceptions of their current stress level, the odds of reporting growth increased by 37%. Finally, for every one point increase on the item assessing athletes' perceptions of control over the occurrence of the stressor, the odds of reporting growth increased by 23%.

Qualitative Phase

The qualitative phase of this study was guided by three research questions: (a) What are Division I athletes' experiences of stressful times/events in sport? (b) In what ways does growth manifest as a result of sport-stress for Division I athletes? and (c) What personal, environmental, and social mechanisms assist Division I athletes' perceptions of positive growth as a result of sport stress? A general inductive analysis was conducted in order to summarize the interview transcripts, as well as to develop a framework for understanding the SRG experiences of the 11 Division I athletes interviewed (Thomas, 2006).

The interviews were transcribed to produce 168 double-spaced pages of text, and 723 segments of text were coded and combined to form 19 lower and higher order categories. The 19 categories coalesced into four general dimensions detailing the SRG experience of the athletes. See Figure 1 for a hierarchical outline of the categories and dimensions. Following the finalization of the categories and dimensions, a conceptual model was created to demonstrate the process of SRG as described by the athletes (Figure 2).

I. Personal & Sociocultural Context

II. Disruption
    1. Struggles
        A. "Hard"
        B. Negative Feelings

    2. Working Through
        A. Facilitative Personal Qualities
        B. Strategies to Overcome Stress

III. Social Support

IV. Positive Psychosocial Outcomes
    1. Emotional Rebound

    2. Personal Growth
        A. New Life Philosophy
            a. Changed Perspective on Life/Sport
            b. Increased Appreciation
            c. Increased Spirituality

        B. Self Changes
            a. Increased Personal Strength
            b. Better Life/Sport Functioning

        C. Interpersonal Changes
            a. Changed Relationships
            b. Increased Altruism

    3. Positive Reflections

Figure 1. Hierarchical Outline of Lower Order Categories, Higher Order Categories, and General Dimensions from Inductive Analysis of Division I Athletes' SRG Experiences

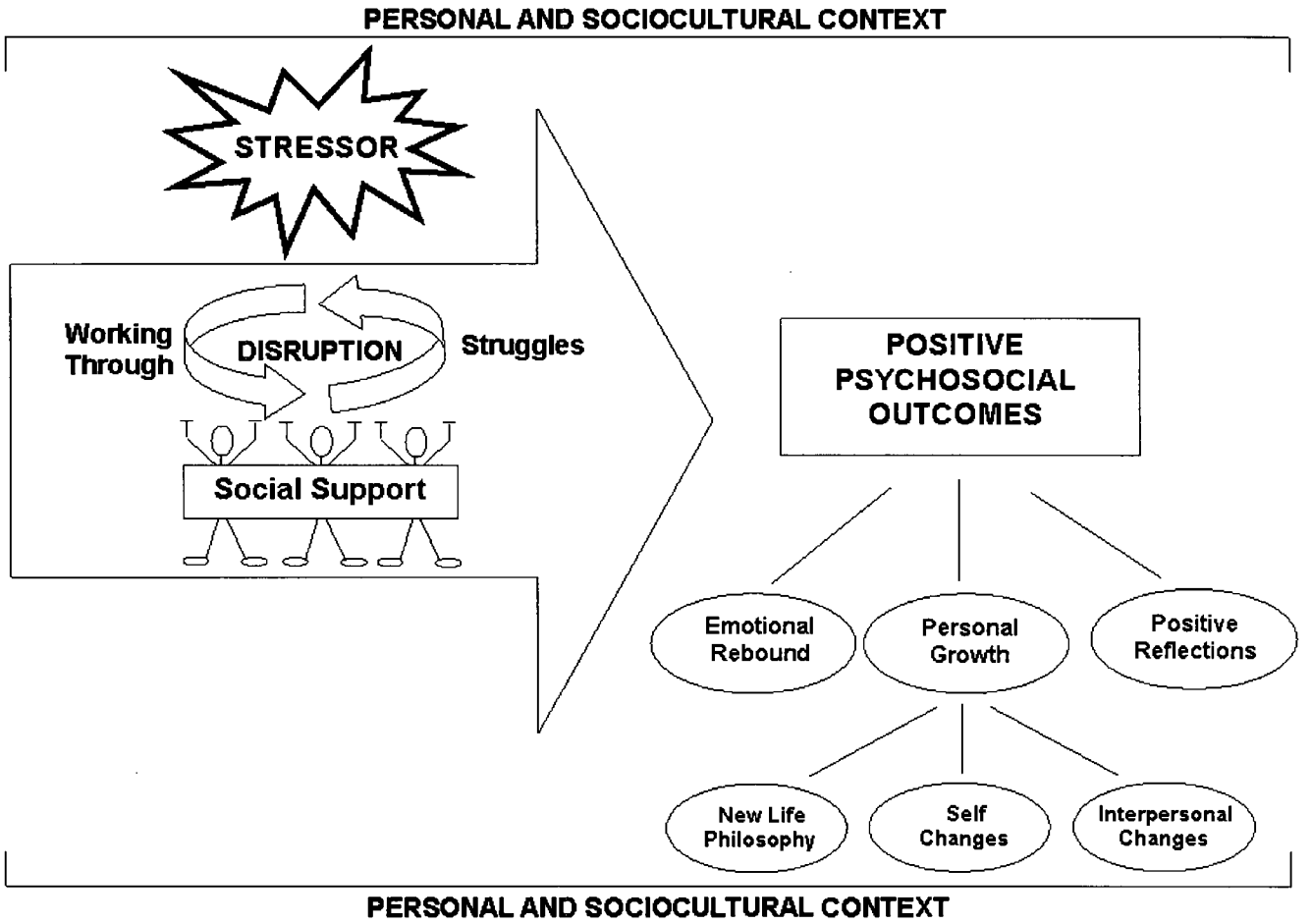

Figure 2. Conceptual Model of Division I Athletes' SRG Experience

In the following sections, appropriate quotes are used to illustrate each of the dimensions and categories.

Personal and Sociocultural Context

As seen in the model, the life experiences and personal characteristics of the athletes framed their stress experiences. The athletes discussed cultural, familial, and personal factors that influenced their stress response. Leyla, a 22 year-old gymnast, revealed how her Korean culture had a strong impact on her beliefs about seeking help upon realizing that she suffered from depression:

> after I accepted that I needed help which was really hard for me because I was raised like the Korean culture and I was taught that even though you're sad you're supposed to act like you're not . . . but- you know I just accepted that I was different.

Several of the athletes believed that their personal character was shaped through family difficulties experienced earlier in life. Frank, a 22 year-old cross-country runner, discussed how his family situation played a vital role in his personal development:

> I've had to work for everything that I've ever had. I mean I haven't been handed everything on a silver plate. I mean my parents are divorced I've been the man of the house pretty much since I was little- because I only grew up with my Mom and two other sisters- and ever since I was little I had to pitch into you know- I had to buy everything for myself, ever since I was 16 I've worked and so I've never relied on anybody else.

Similar sentiments were expressed by Norah, an 18 year-old track athlete:

> my parents divorced when I was younger. So . . . I was six years old and I was young I hadn't really had . . . it was hard in that I didn't really understand everything and then at the same time I think if it would have happened later I would have really gotten used to that father figure you know? And then not have it and that would have been harder . . . but when I look back on that . . . it's kind of like "Ok I was able to get over that that . . . that wasn't that hard" but I was and become a stronger person from that.

Frank, a 22 year-old cross-country runner, noted the importance of working with his Dad as instilling a strong work ethic in him:

> I always try to do my best at everything. I don't really try to give everything . . . the only way I know how to say it is like a "half-ass" job. Because that's not the way I was raised. Because I grew up . . . my Dad was a contractor and I grew up from the age of seven or eight going to work with him in the mornings and the summers and working during the day. He did a lot of concrete when I was younger and I was doing something and I messed it up he'd be like "You know you need to do it right because otherwise it's not good." He was like "Other people might do it that way but that's not the way you're going to do it."

Prior sport experiences were mentioned as influential in shaping athletes' ability to handle their stressor. Joe, an 18 year-old cross-country runner, described how being an athlete helped him to grow from the stress of being a Division I athlete. "I think it's my determination. I didn't want to get beaten by [lack of time due to sport demands] I didn't want to have it crush me and just kind of drop everything. I wanted to beat it. So I guess competitiveness from sports [helped]..." Janet, a 23 year-old track runner, believed that her prior struggles with a sport injury changed her perceptions about being an athlete, and influenced how she handled the stress of changing sports:

> hurting my knee was the hardest thing in my life. Because I was trying to represent my country and people like me . . . and they had hopes for me to go to the Olympics and to represent my country and then when I got [injured] . . . I wasn't important. And when I got it . . . I felt so sad. I cried for many weeks like many months I cried. I refused to accept it. But then you know . . . I was forced to accept the way in life . . . I realized the big thing is...when I struggle I try to accept it first but then later on I just like stop and just realize "Ok, what's going on in my life and what should I do about it?" And . . . I think it's an advantage for me . . . it was an opportunity for me to learn more about myself and . . . because I was just like crazy I just focused on sport only I didn't really have a social life. And I can stop and . . . learn more about my family and its importance. And . . . I learned so much in 2 years that I didn't run. I learned so much from life . . . I learned that basically sports even if I like it, even if it was my life, now it's not anymore . . . and this has opened my eyes and just see things differently.

Disruption

With their personal and sociocultural context as a backdrop, all of the athletes noted a particular stressor that they had experienced in sport in the past 3 years. As shown in the model, what emerged from the interviews was a cycle of disruption characterized by struggles and attempts to work through the stressor.

Struggles

The athletes' struggles were the result of both the overall difficult nature of their stressor, and a wide variety of negative feelings triggered by the stressor. The label "hard" was chosen to describe the former, as every athlete used this term when discussing their stress experience. For example, Olga, a 20 year-old swimmer, noted that it was "hard to find time" to balance her school work, be a swimmer, and at the same time maintain her relationships with old friends. She also said that it was "just really hard to think positive sometimes . . . especially in the down moments [when] you just want to give up." When talking about having to sit out during practice as the result of a shoulder injury, Blakely, a 21 year-old softball player, said:

> sitting and watching everyone playing and I had to kind of sit there and it sucked. And I just sat on the sidelines- it was just during fall ball though so it really wasn't that bad but it still sucked because people were practicing your position just in case you didn't come back and I was like "Alright that's not even funny" . . . so that was probably the hardest. And you just want to be able to go, go, and go but the doctor's like "Oh you're only 80% so you can only do this" but of course I didn't listen and that didn't work so well (laughs). But yeah that was the hardest I would say.

Similarly, Frank noted the difficulty of not being able to practice or compete due to his stress fracture:

> just seeing people do it and- I mean I love to do it it's been something that's helped me through a lot and it's hard not to do something that you love and watch people that you know you can beat do well. It's really hard because I've only had one track season and that track season was the season where I could actually get some good personal records and it was just really hard not to be able to compete.

Other athletes struggled with whether to drop out of their sport. For example, Joe reflected on the times when he considered quitting the cross-country team: "there were those days usually it was when I was sick and I was like, 'I don't feel very good.' Or if there was something I really, really wanted to do, I was like, 'If I wasn't running then I'd have all this time and I could do everything I wanted to do.'" Nicole, a 19 year-old swimmer, had similar thoughts: "I always thought about stopping swimming I guess, because I was always tired." Ryan, a 22 year-old track athlete, also wrestled with the notion of quitting track: "Something that's been really stressful is- 'well should I drop track or not?' But the problem is I'd feel like a failure (laughs) because it's always been my goal just to make the team."

Debilitative mental and physical consequences were discussed by several athletes. Perhaps as a result of the stress of balancing work and track, Ryan suffered negative physical symptoms:

> I've been getting a lot of extremely severe headaches the past several months and the doctor got MRI scans . . . they're not sure what's wrong. We're not sure if they're a migraine problem because my father has migraines, or if they're stress related. One time it was so severe that I couldn't drive anymore. I called my Mom and she said "We're going to the doctor right now." It was just really, really bad.

Charlot, a 21 year-old cross-country runner that suffered from clinical depression, expressed how the demands of training further exacerbated her stress: "we had two workouts a day morning and night . . . and that was just so hard on my body and mind

and everything . . . along with the depression . . . it just made it really, really hard." The demands of sport also had a negative effect on Nicole: "being so tired it makes you not want to eat . . . so you just want to go to bed . . . I don't eat as much as I should because we're working out so hard and so that just makes me weaker."

Along with the difficulty of the stressor came a host of negative feelings. Haley, a 19 year-old track and field athlete, discussed how she felt after suffering a neck injury due to a car accident:

> I was little worried because most of the other injuries I've had have been wrist or knees and they kind of go like "Ok here's a brace slap it on, take a week off," but with this one, it was a lot more serious and my Mom was really stressed about it which made me stressed about it.

Both Charlot and Leyla battled chronic depression, and talked about feelings of sadness and apathy. Charlot said: "I just was really sad all the time and it wasn't something that would happen one day a week it was *every* practice and *every* meet . . . I would just cry all the time almost every day." Leyla struggled with a loss of motivation: "I remember I was doing so great and then we came back from break and I couldn't do anything and had no desire. And I sat down with [coaches] and I said 'I really don't understand what's going on' and I started crying I couldn't even get any words out."

Confusion was common for many of the athletes as they attempted to make sense of their situation. Frank wondered why his injury "happened to me and not somebody else." Charlot noted: "I didn't know what was going on with me." Haley expressed being in "shock and disbelief" following the news that she had sustained a serious neck injury. Norah talked about her feelings of uncertainty prior to the state track meet:

> I've always been scared of the big state meets because that's kind of "it" that's what you've been working for and that's kind of the medal that you get . . . stands for everything that you've done and . . . I just always get so

> nervous I didn't know what to expect . . . you'd be racing against people you've never raced against and . . . I'm always a person that likes to have . . . practice it before I actually perform it and so . . . when I'm against these other people I was like "I don't know" I just get so nervous.

Working Through

As the athletes struggled with their stressor, they relied on facilitative personal qualities as well as active efforts to overcome the stress. Several of the athletes discussed maintaining a positive mentality as an important part of negotiating their stress. Janet addressed being positive: "when I have a hard time, then after the hard time, I just sit back and see 'what did I gain from it, what did I learn?'" Haley discussed how her positive attitude influenced her rehabilitation: "I would try and do all the exercises they told me to do like twice I would make sure, I was like, 'I'm making sure these things are working!'" Blakely's positive attitude allowed her to brush off criticism as she recovered from her injury:

> having to deal with criticism and having to be ok with it and accept it and learn from it rather than be bitter and not be used to it and being like "Ok coach" with a smile instead of being like "F you coach" or whatever (laughs) . . . so definitely already knowing how to do that did help. I was just like "whatever" and that goes back to being positive.

Olga developed her own distinctly positive philosophy for handling stress as a Division I athlete:

> I developed a little philosophy about college swimming: The first thing I need to do is to learn how to do hard things because you're always going to encounter them in life. You need to learn how to do hard things. The second one is to enjoy doing hard things. Because you know sometimes hard things will happen or come but you've got to try and enjoy it because you can either be sad or happy. And the third one is a lot harder. I'm still working on the third one. Try to enjoy doing hard things and try to help others enjoy doing hard things. Make it fun for others.

Being motivated to overcome their stress was another personal quality that emerged from the interviews. Leyla was passionate about gymnastics: "if I love something I'm going to love it with all my heart I love it with every single part of my body and my mind and if I don't feel like I get that much out of it then I don't- I don't want to try." Charlot talked about being determined: "I had my best season last year but I think it was because I pushed . . . I am really a determined person so I pushed through it." Blakely talked about the importance of toughness: "You still have to be mentally tough and physically tough and put up with everything from your coaches and teammates and physically with your body and everything."

Being positive and motivated influenced the types of coping strategies that the athletes chose to manage their stress. Some of the athletes compared their situation to others as a way to alleviate their stress. Joe talked about comparing his stress to his Mom's stress:

> I mean she deals with a lot of stress too. Some of it I put on her not on purpose but just because I'm her son. And so me having that stress kind of made me see her better in what she did. Because I see all the stress that she goes through and it's like mine is at this level and hers is way up here and so it's like "Oh I'm glad mine isn't there yet."

Norah talked about self comparison: "Just looking at the other accomplishments that I've had you know? So the end of senior year I was senior class president . . . I was able to look at that 'Oh yeah well like you know I was able to accomplish this.'" Haley chose a more spiritual comparison: "I really like the idea that whatever pain you go through now is nothing you can't imagine what Jesus did. So I sit there and I go 'Ok if this is what I'm going through somebody else went through a lot worse.'"

As alluded to by Haley, religious-based coping strategies were reported by some of the athletes. For example, Frank turned to a church leader for support:

> I went to an influential person in my life he was like my Father and I asked for a Priesthood blessing which is basically for counsel . . . he said that I wasn't supposed to run at this time and I had this stress fracture for a reason and that it wasn't for me to run that I needed to go on my mission [and] focus on that.

Norah received a blessing when she became sick prior to the state track meet: "I just needed that extra power to kind of rid me of the sickness or to just change my mentality of it . . . he came over and gave me that blessing with the power that he has." Haley believed that prayer was a good option for her during her rehabilitation: "I did a lot of prayer at that time. What else was I going to do right? I mean you know, sitting around."

In addition to comparison and religion, the athletes discussed a variety of other cognitive and behavioral coping strategies. Janet used positive reappraisal: "I took advantage of [changing sports]; that's why it wasn't that stressful. I just took advantage of it and saw it as an opportunity to grow." Olga adopted an ostensibly simple strategy: "I actually found time for myself instead of worrying about school and swimming just have some time to relax." Blakely used a metaphor for describing how she coped with criticism during her recovery: "my arm was still bothering me and then my coach was still on me about throwing and throwing differently from a different base and all that kind of stuff so just you have to build up this hard outer shell." Charlot described how she kept herself positive:

> I think the thing that helped me a lot was keeping a gratitude journal . . . even if I couldn't think of one thing to be grateful for I would think of something in nature or something even if it was just one thing and as I kept doing this every day I would do this every day and every morning

> and as I kept doing this I would come up with pages and pages and then it seemed that it got lighter in my mind you know everything just seemed a lot more positive whereas before I was just focusing on everything that I was doing wrong.

Not all of the athletes had such elaborate coping strategies. Ryan talked about what he did to earn a scholarship: "I just know that I have to work extra hard."

Social Support

The cycle of disruption was supported by family, friends, teammates, and coaches. Supportive others were cited as having a considerable impact on athletes' ability to successfully manage and achieve growth from their stress. Family was mentioned by most of the athletes as a key source of support. Olga talked about her parents: "Especially when it was really rough I just wanted to talk you know. Talking with my Mom and Dad just made me realize 'Ok I am learning something from this.'" Joe discussed his family as being supportive during his chaotic senior year of high school:

> They were always giving me encouragement, "You can do it" or "Sure maybe we can schedule another time where we could do this" so I felt my family really did care for me so it's like I want to spend time with them and do things with them too so just the fact that they were supporting me helped me want to reach and go past where I couldn't do anything.

Leyla felt a less direct but still powerful form of support from her sister:

> in the past few years I've felt a burden on me and expectations because I was never there for my sister. Like physically I couldn't be there to live with her and to show her how to drive or whatever and I kind of . . . felt like that was my fault and I only see her twice a year and she's growing up and she's going to go to college and I'm never going to get to see her but I feel like by her being so strong that way that she gives me strength mentally and if I'm in gym and I'm mentally weak and I'll be like "do this for your sister." And I'm able to.

Friends and teammates were another important source of support for several of the athletes. Haley received some good advice from both her Mom and her friends on the team:

> I was actually talking to my Mom and I remember my Mom was like you know "If they can't see what you've accomplished so far during preseason and during the summer and everything, then they don't deserve you." And I sat there and I was like "Mom what are you talking about? This is like Division I." She's like "I don't care." And it's your Mom so you're kind of like wait "nah" . . . but I started also hearing that from some of my really close friends and everything they're like "You know you're more than just your sport."

Leyla noted that her teammates "help me realize who I am and how important I am- in a nonselfish way." Charlot told the story of an unlikely source of support on her team:

> there was one girl on the team that I just thought was really mean and really cocky and then through this she's been the one that was right there by my side the whole time and she would let me just cry on her shoulder and we're just the best of friends now and I mean we'll probably be friends forever from this.

Ryan received support from his girlfriend:

> If I'm frustrated about something she'll listen, which is really what everyone needs (laughs) I mean it's ok to vent about things you know I mean it's healthy I feel. Yeah you know not at the moment maybe you're not looking at the positive side but she'll listen . . . once I'm done she'll point out some positive things she's like "Well, what about this and...?'"

Coaches and other team staff were a further source of support for the athletes. Haley discussed what her coach did to make her feel good after her accident:

> My coach was really cool he always writes a summary and he'll send it to all [of] his throwers previous, the ones that's are on the team now, and fans and everything and he'll send things and I remember when I got in the car accident and I wasn't going to be able to make it to Idaho and everything he wrote up a really nice thing that said you know "We're missing one of our little freshman and everything and we just keep thinking about her and everything." It was really sweet and I have them all in a binder at home.

Blakely noted the lesson that her junior college coach taught her: "she came from a bigger school and so she gave us a lot for what she could do and so she made us always appreciate everything that we had because it could always be worse." Although Janet did not mention her coach, she did discuss support from her athletic trainer:

> I had a good trainer, and he knew that I was a sprinter and he would always support me and he would always like to give me good advice you know? And I took his advice seriously. And I did have respect for him.

Positive Psychosocial Outcomes

The final stage of the model depicts the product of athletes' cycle of struggling and working through their stressor. The positive psychosocial outcomes dimension is comprised of three higher order categories: (a) emotional rebound, (b) personal growth, and (c) positive reflections. Representative quotes from each of the three categories are presented in the following sections.

Emotional Rebound

Most of the athletes expressed feeling emotionally "better," or happier as compared to the time period during their disruption. Nicole noted her emotional rebound following a difficult freshman season:

> I never had someone to just sit down to talk to. I'd just stay home and do nothing but now that I know I have some true friends then I can call them and ask them if they want to do something. So I guess not having those kind of people hurt me last year . . . but now I'm happier because I have good friends.

Janet also became happier upon arriving at her new school and becoming a sprinter once again: "Now since I'm here I'm a little bit [happier] because I'm doing what I want." Haley was more illustrative in discussing her present situation: "things

started looking up and you got one foot moving and you start getting out of the place and . . . it's now shining. It's awesome." Joe said that he was "feeling a lot better" since he learned to manage his school and sport schedule. Frank noted that "Things improved greatly" once he came to grips with the decision to forego his freshman track season and leave on a church mission. Leyla discussed how her emotions have changed since failing to make the Olympic trials:

> I cried for a long time because I was like "gymnastics is all I have. What am I going to do after this?" I wasn't even planning on college I didn't know what college could bring to me- you know? But now I feel like when I look at one thing and I have a goal and I have a goal below that to just get a little bit closer to that bigger goal. I feel like there's so many goals and dreams that I can accomplish and I don't realize it until I've accomplished that so- I'm happy.

Personal Growth

Because the athletes in the qualitative phase of this study were chosen on the basis of having high scores on the PTGI, it is not surprising that personal growth emerged as one of the psychosocial outcomes of their stress experience. Growth manifested in three ways: (a) new life philosophy, (b) self changes, and (c) interpersonal changes. Each of these categories is addressed in the following sections.

New Life Philosophy

Perhaps the most profound domain of personal growth discussed by the athletes related to a new way of viewing life and sport. All of the athletes discussed either an increased appreciation for life, increased spirituality, or a changed perspective on life/sport due to their stressor.

Increased appreciation. Many of the athletes believed that they had gained a greater appreciation for people, sport opportunities, and even the simple things in life as a result of their stressor. Ryan addressed his parents:

> I notice it a lot more. I mean I'm sure it's always been there but I've just noticed it a lot more . . . like the day that I was having that really bad headache and I just told my Mom and she was like "We're going to the doctor right now." I mean she had work and stuff but she . . . came with me to the doctor's office (laughs). She talked to the nurse lady and she was like "I need to get him in right now."

Nicole also spoke about being more appreciative of her family:

> at Thanksgiving when you're thankful for something . . . when I was younger I just said random stuff but now I *really am* thankful for my family and that they're all ok because they're all stressed out and stuff.

Haley reflected on the support she received: "It's one of those things where I looked back at it a few weeks ago and I was just thinking about it going 'Wow, you know everyone really did care that much.'" Both Ryan and Olga discussed a new outlook on interactions with others. Ryan said: "the time I have to be able to just sit down with different people and have conversations with them. The more in-depth conversations then maybe I used to have." Olga went into more depth with her assessment of social interactions:

> just having time to spend with family or . . . just the small things that we take for granted sometimes when we have spare time. Spending time with friends. You learn to appreciate a lot more and to appreciate connections with people more. I feel like we're losing a lot nowadays with Facebook and stuff you don't really connect with people (laughs).

Other athletes discussed a newfound appreciation for their sport. Blakely experienced a renewed appreciation for softball after her injury:

> I could not imagine my life without softball . . . to have the opportunity to go play and it's kind of like "Why wouldn't I?" And there's only two more years left after my JC so . . . it made me find a new love for softball I guess you'd say and it's something I've been doing since I was like six

> so it's kind of like "What's two more years?" and I didn't know I was going to miss it that much just by being hurt.

Janet was appreciative for being on the track team:

> I have more appreciation about being in the team because it's hard to be in the team. But I made it. And I'm still living my dream because now I'm running what I want to do. And I understand it, I appreciate it, and I give more effort into it.

Although none of the athletes experienced life threatening stressors, several of them expressed being more grateful for the more mundane aspects of life. For example, Olga said that the stress of adjusting to life as a student-athlete helped her to "[learn] to enjoy the small things in life." Joe was adamant about one thing that he was more appreciative of:

> Ah free time! I mean it doesn't happen very often but when it does it's really nice just to take a break and not have to do anything even just sit or sleep or look at the wall. Just something even if it's like for 15 minutes. It's always nice just to have 15 minutes to yourself.

Frank was more appreciative on a greater level:

> [stress fracture] really helped me appreciate the days more and I know that this season was a lot better because I had tried and not taken for granted every single day every day I felt like I was running like it was my last, because it could have been.

Leyla expressed a similar sentiment: "it'll be a new day so make the best of today because today won't ever happen again." Like Frank and Leyla, Haley became more grateful for each day following her return from a car accident:

> I don't take each day for granted I used to go, "Oh you know Monday through Friday I have practice five days a week and then you know..." A few months later you get to be in season, and, I've also had some other things happen lately a few weeks ago my first coach who told me to be in track and field, he passed away suddenly so, for me it's, day-to-day kind of thing, this was a blessing and make the most of the practice and I don't know this semester's going by so fast I'm sitting there, less than 2 months we'll be back in season, and it's hard to think it's almost been a year since the accident and . . . I'm really grateful.

Changed perspective on life/sport. Another part of the athletes' new philosophy on life was a changed perspective or outlook on what was important to them. A changed perception of sport was frequently mentioned. Charlot said:

> the very first years I was here at college I think my main priority was only running and I mean I would die if I missed one day of practice it would just kill me . . . I am really dedicated I guess and it almost was to a point that it was excessive and too much I guess and . . . the thing that I learned the most from this was just that running isn't the only thing in my life that I'm good at or that I can progress in . . . but at the time I think I was weighing too heavily on running as the only thing I was good at so I was just constantly focusing on running and only running and not relationships and family and friendships and that sort of thing and then when all of the depression and anxiety set in I started to realize how important my family was and how important my friends are to my success . . . it's not all about "me, me, me" and my performance I guess so . . . that was the biggest awakening to me was just that running isn't the only thing in life.

Nicole discussed her changed perception of swimming:

> [stress of freshman year] just put things in a bigger perspective than just school and swimming you just have to- I don't know it helped me put things in perspective at this- swimming is not my life it doesn't define who I am.

Frank believed that his stress fracture was instrumental in allowing him to shift his priorities:

> the most life changing thing that's happened to me is really realizing what's important . . . I just didn't care about running. And that had never occurred to me in the past that I would never have that feeling of just not caring and not even wanting to run because I was so obsessed and even my friends saw such a big difference in myself because I went from one extreme to the other and it really helped me. To this day I owe a lot to that- that specific day and the stress fracture that I had.

Nicole's priorities changed during her difficult freshman year:

> last year I just realized that I have to have priorities . . . not go and hang out because I never did in high school and then all the people that did in college were fast but I don't know how. So I found out that "Hey I can go

> out and hang out all the time," and then go to practice in the morning dead. So I don't know how they do it.

Norah talked about the lesson in confidence that she learned from her negative state meet experience: "state meet showed me that your mentality is more important . . . and ultimately matters [more] than everything else- that's really all that matters if you think you can do it then you can do it." Other athletes noted perspective changes related to how they live their lives. Haley discussed her new outlook on volunteer opportunities:

> it's also changed myself in that . . . they say "You should volunteer more often," And I used to go "Oh they don't want to see me I'm a freshman." But at the same time . . . I'm like "You know what? Going down there and doing something, at least you tried to make a change" and I'm trying to take full advantage of all the opportunities I'm given.

Leyla developed new goals following her struggles with high expectations and depression: "to be really happy this season and just have fun." Despite a severe lack of sleep due to running track, going to school, and working nights, Ryan became more focused:

> I felt like I was much more engaged in what was going on right around me. More of a moment-to-moment thing . . . . it just really helped to look at everything from a day-to-day perspective. I felt like yeah I was more involved and focused. And was able to cope with what was there and then move on.

Frank felt that he became more future-oriented as a result of his struggles:

> I have a much better sense of the future and I know that opportunities will be there because of it. I don't exactly know what those are, but I know I'll have an opportunity to go to school without having to worry about paying for it because of the scholarship and just things like that.

Increased spirituality. A final component of the athletes' new life philosophy was an improved relationship with God, and a stronger religious faith. Nearly all of the athletes noted enjoying spiritual benefits as a result of their experience. Many of the

athletes' religious beliefs were affirmed based on the perception that they received assistance from a higher power during their struggles. Haley addressed her belief that God was on her side: "there was something else there in my opinion that helped me get strong enough to compete again and not lose the season." Similarly, Norah believed that she received assistance from a higher power during the state meet: "it wasn't all me running all of the races . . . I feel like I definitely had some help getting through that." Ryan spoke about how he believed that someone was watching out for him during is busy year.

> last semester I did school and track and then I worked nights on the weekends. And I (laughs) I never really realized until later I was thinking "how did I make it through that?" I mean that was insane. I didn't know what I was doing and I finally realized that I personally became closer to God. I felt as though he was more in my life because . . . honestly sometimes I do not remember driving from point a to point b (laughs). And looking back on that . . . I always had free time even though I was constantly moving . . . going, going I still had free time. I still got really good grades. And I was able to accomplish everything I wanted to . . . it was good. I feel as though I couldn't have done it on my own.

Frank discussed his theory for why his injury occurred:

> there is an author of our lives there's somebody who is much greater than ourselves and that is looking out for us and- things happen in our lives for a reason and I wouldn't say that I'm like this because of my stress fracture but I'm like this because somebody's watching out for me and somebody's making things happen in my life to make sure that I'm the person that he wants me to be. So I wouldn't say that all this is caused by the stress fracture because I don't believe that that happened just because science said that my leg's going to break because I was running too much. But I believe that it was something that was caused because a lot of it- just some of the times the doctor would be "I don't know why this is happening I don't know why" and everything I heard that a lot it- I mean scientifically my leg should have been healed a lot sooner but it just wouldn't heal and then as soon as I really started getting my priorities in order that's when I felt like my leg started to get better and . . . and so I just learned that somebody's in control and things happen for a reason because that's the way they're supposed to that's the way he wants them to be done.

Other athletes expressed a strengthened spiritual purpose because of their stress. Olga talked about her spiritual awareness: "I've also realized that I'm a much stronger person than I thought I was spiritual-wise and just finding out that I do have the strength to stand up for what I believe in and say 'This isn't right.'" Haley felt the need to spread her faith to others:

> I feel like I need to be a vessel for God in some aspects and we've been going to church together and kind of growing not only physically together but also spiritually and obviously emotionally since we go through the pr's and all the good things you do and the meets where you just do horrible and so . . . I think it's been really, really nice and I mean . . . I'm not afraid to go "Hey lets go to church."

Charlot noted her spiritual changes: "I feel closer to nature and more of a divine purpose if that makes sense . . . I've felt at peace with myself through nature and through my religious beliefs."

Self Changes

A second area of personal growth for the athletes related to perceived changes in their attitudes, life skills, coping strategies, and ability to handle adversity. The self changes category is comprised of two lower order categories: (a) increased personal strength and (b) better life/sport functioning. The following two sections address each of the self change subcategories.

Increased personal strength. Many of the athletes believed that they had become mentally and emotionally stronger through their stress experience. Blakely believed that she was "definitely stronger" from her injury experience. Joe talked about how he became better: "I found more purpose in myself . . . I could actually do good because I had to work through all that stress. So I could actually be a better person because of it.

Leyla felt more confident that she could handle future struggles: "I'm a stronger person now, and I can deal with things, and I feel like I have more strength to have faith, to know that I'll be ok." Nicole similarly stated: "I can deal with things better than before . . . a bad experience I can not totally freak out and think I'm totally lost. I guess I know how to deal with stuff better." Norah felt improved because of her stress: "I feel like I'm a better athlete and better able to get over these obstacles that I didn't think I would able to get through at the beginning of the day." Charlot was amazed at her newfound strength:

> before these experiences I wouldn't have known that I had the power to do those things I mean before I hated speaking in front of people and it would make me so scared but it's neat that I guess as you said I feel so much stronger now and I can do whatever I want. I feel strengthened from this experience.

Some of the athletes noted sport-specific areas of increased strength. Olga discussed a change in her ability to deal with her coach:

> sometimes even standing up to the coach saying "Hey!" it was really intimidating to talk to [coach] at first about things that I didn't agree with him, and sometimes he still doesn't listen but getting your voice out there. It really helps to speak up to your coaches.

Frank discussed being a stronger competitor:

> when it comes down to who wins it comes to their drive and to what kind of competitor that person is. And I felt like so many races where at the end I was dying and- and there was really only- I think that a lot of people could have beaten me but because I was mentally tougher and just stronger I felt like if it came down to the last 100 meters I could destroy anybody because I knew that I was strong. And that came to a lot of times in the races where it came down to that, and really that's what helped me. It didn't mean that I was better than the other person, but it just meant that I wanted it more. And so I think I want things a lot more than I used to. I'm more ambitious. And so coming to school it's the same thing in life if you apply that in life you'll be a lot more successful. And I realize that nobody's better than myself, that it really just comes down to who wants it

> more and if you know you want it more than you know you're going to win.

Better life/sport functioning. In addition to feeling stronger, the athletes discussed gaining new coping skills, having a better attitude, and being more responsible as a result of their stressor. Joe talked about changes in self-regulation: "I'm better able to control my emotions because I had [lack of time] and so when I got through it was 'Oh!' I have a better range. So I'm not always like down here . . . it didn't go up and down." Norah learned a new competitive coping strategy: "when it came down to it was just me against myself and then instead of me against all the other girls and so if I was able to understand that and then control that stress then I'd be able to do better." Frank adopted positive reappraisal coping when he had a new injury scare:

> I know I had another possible stress fracture scare after the first race of the season- I was running after a race and my foot just starting hurting really bad and I had to go get an x-ray and a bone scan and everything and they thought it was a stress fracture and the whole time I was just dreading it you know kind of sad and depressed but at the same time I was thinking- "The first time it happened something really good came from it and there was something really important that I needed to learn" and . . . I was looking more what I could learn from it.

Blakely discussed changes in the way that she viewed her body: "I've gotten a lot more patient with things and more intuitive with my body and listening to it rather than 'Oh that's not going to happen to me I'll be fine' and 'It happens to other people but not me.'" Olga learned to assess her own growth:

> after these couple years of college swimming you learn to take the hard times and you just ask yourself "What am I learning from this? How am I getting better as a person?" Because I am. I enjoy it a lot more when I realize you know I am growing from these experiences for better or worse. Usually it's for better.

Some of the athletes believed that they had become more responsible and disciplined as a result of their stressor. Nicole addressed how she had matured:

> during practice or if a coach tells someone that we have to get something done then I'll volunteer and do it. And if something happens... then I'll take responsibility for it. I mean if it's my fault then I won't make up excuses and stuff and I'll . . . just move on. Try better next time... my bike got stolen but I didn't lock it up. So I was just "Well it's my fault." Instead of just sitting there and every single bad thing that happens building up . . . forget about it and then try to think positive so I'm not as stressed about everything.

Ryan was one of several athletes who learned time management:

> time is the biggest thing. Sometimes before I might be you know "Whatever I'll do it later" whereas now it's "I have some time let's do it now." Because in high school it was definitely not all there (laughs) . . . one example I could say is in high school when I had a girlfriend I'd be late to work and stuff because of her- I mean it's not her fault ... but now though it's "Oh it's time to go I've got to go head for work." So I just go to work and I'm on time.

Interpersonal Changes

The final area of growth identified by the athletes was interpersonal growth. The athletes believed that their relationships with important others had changed in positive ways as a result of their stress. The interpersonal changes category contains two lower order categories: (a) changed relationships and (b) increased sense of altruism. Quotes from each category are presented in the following two sections.

Changed relationships. For all of the athletes, stress presented the opportunity to establish closer connections with others. Haley spoke about the evolution of her relationship with her coach:

> I used to be scared of my coach. I'm not going to lie (laughs) . . . he just scared me . . . he has this really sarcastic personality and I was just scared so, so much by it. And I was afraid that when I got injured he would just let me go. Because I mean I was a walk-on, you know, I really hadn't

> competed and so he hadn't really seen what I could do so that was I think one of the worries that was going on at the time. But he was really supportive of it and he was like, "you know, make sure that you don't do anything that you can't do and make sure you go to the trainer and everything."

Because of her injury, Blakely filled a new role on her team:

> I had to become more understanding because I was more of the leader . . . just making your plays and so then I had to become more of a vocal leader I guess, kind of emotional get to know my teammates more because I had nothing else to do. It did help me become a better teammate . . . I was the type of person if we had a problem I would just be "Oh lets just play" and "leave it off the field." I was more of that type of person rather than "Well if there's really big problem lets figure it out lets talk about get to the root of the problem" . . . I had to be more . . . kind of like a Mom I guess because I couldn't show myself on the field so I had to show myself in other ways. So I had to try and be a better friend outside of softball and off the field which was new to me but not totally foreign but I never really wanted to do it before- I never had to do it before I guess.

Olga felt closer to her teammates due to their intense training regimen: "especially with your teammates you grew a lot closer through that- you live through pretty terrible things together and that helps you. Just going through hard things together usually makes people grow closer."

Many of the athletes believed that their nonsport relationships had also changed because of their stress. Charlot talked about her relationship with her Dad:

> that was the most impact thing as I went through depression was that I became so close to my parents and they are my best friends now and before my relationship with . . . especially my Dad was almost not even existent and . . . and then . . . as I went through that he was the one that was there for me and he knew something was wrong and he helped me get through that part of my life so that's been probably the most amazing thing that's happened and I'm so grateful for that experience for that very reason. It's just to build that relationship with my Dad that I didn't have before . . . and then . . . along with all my other relationships but in particular my Dad I would say.

Nicole felt closer to her parents:

> we're closer because we actually talk about . . . I just started talking to my Dad about my relationship problems. I never would have done that before. And I talk to my Mom about him too. I'm more open with my parents and tell them about everything instead of feeling like they'll like get mad or something. So I think that's changed.

Ryan discussed his girlfriend:

> she helps me a out a lot at my night job she'll webcam with me almost the whole night she'll stay up with me and keep me company and help me keep awake and so I can focus on my homework . . . it's really increased the depth to our relationship because I mean you have all that much more time to talk. I mean we'll both just be doing homework and then all of a sudden a thought comes and you can sit right there and share it . . . there's this book that her Mom gave her it's called "First Comes Love" and we read that every Sunday night together. And that's kind of become our special day Sundays because that's when I'm most free. Because I usually don't do homework on those days and then I don't have work on those days so usually those moments that we spend together are more in-depth.

Joe felt that he had something to offer his younger friends:

> I have friends who are still in high school and see like them going through like a whole bunch of pressure because they're graduating this year. And so I see them you know senioritis like "Ah, it's almost there but it's so hard" and I can say "Oh well . . . " I can relate better and say "Oh you'll go through it . . . you're ok" and you know, I'm able to kind of understand people better when they say they have a problem or they're not feeling so great that day or things like that.

Increased sense of altruism. A separate but related interpersonal change discussed by the athletes was an increased drive to help others. Frank believed that his injury was actually beneficial for others:

> I went to Brazil for the two years and seeing those people and helping them you know I don't know if I left early on my mission that I would have and so who knows what would have happened if I would have ran a little bit longer if I would have gone to the same place- you don't know. I would have sent my papers in later and I felt like it was the way it was supposed to me and so I realized afterwards that all of that just played to the benefit of everybody not just myself because who knows I wouldn't have helped people.

When discussing how she changed through the stress of expectations and depression, Leyla said: "now I understand that to be the best me is to help others be their best."

Blakely gained a greater sense of empathy for injured people:

> when I got my surgery it was my right arm and so I couldn't really do a lot and I would go places and people wouldn't hold the door open for me, they were rude and so I was like "Ok." People were not nice to me and so I was just like "Ok that's rude" so now that I'm able I didn't always notice those things and whenever I see people that are injured it always going and opening doors for them because I feel for them.

Haley embraced a mentorship role:

> I feel . . . a responsibility . . . we have one freshman this year and she's so quiet. But actually was a really cool story I used to train with her about two summers in high school and she went to a different school and I helped my coach recruit her, and she came which was really cool. So I got to pick a freshman as a little sophomore (laughs). It was really cool . . . I have that "pay it forward" mentality. Someone took you in as a freshman or as somebody younger, and I still feel like I'm like their little sister, but at the same time I love being a big sister to somebody else. So I have a few of them that I'm pretty close with and actually have a few freshmen that aren't on our team that I'm friends with.

Similar to Haley, Olga worked to help the younger athletes on her team: "...just trying to talk with the freshman- they're just stressed. They don't realize that this is a learning process I think still. But they're getting there. I'm trying to help them be more positive."

Upon her attitude change, Nicole tried to instill some positive thinking in her teammates:

> other people that I'm friends with if something bad happens then they'll just sit there and be sad and dwell on it and just tell themselves everything's going bad and it's just going to get worse. And I was like well "Things are bad now but that's just something and it's going to bounce over and it's not the end of the world. You have your whole life ahead of you and things are going to get better."

Charlot expressed a desire to make a career out of helping others:

> I've been studying exercise science but what I really want to do is be a recreational therapist and work with girls on developing their worth.

> That's a huge thing. And I want to be a motivational speaker for juvenile delinquents. I really want to just let people know that they can change their life at any time.

Positive Reflections

The final psychosocial outcome that emerged from the interviews represents athletes' thoughts on the overall significance of their stressor. The quotes in this section tended to occur toward the end of the interview, as the athletes attempted to summarize their experience and provide additional details after all of the questions from the interview guide had been answered. Not surprisingly, most of the athletes had positive reflections on their experience. Haley said: "it's been really a good experience even though at the time it wasn't real pleasant." Although she was not happy during her time on the cross-country team, Janet noted some positive aspects:

> I was kind of fortunate for being there because it's an island and I'm from an island and there is like many islander people over there and at first it was hard to adapt . . . So I already have my family over there and it was so easy to stay and just to focus on what I really want . . . like not remember the running part. It was easy because . . . my friend was cool we hang out you know? And it was fun to be with them.

Leyla reflected on the importance of her experience: "I'm more educated. Not by books, but by life, and my feelings, and things- I think that sometimes are more important than what we learn in school." Norah commented on her stressful event: "I just I thought it was really cool that this physical experience could help in other areas. You know I feel like I've just really grown spiritually and emotionally." Several of the athletes made a point to say that they would not change anything about their experience. Nicole commented:

> I don't know if I would have learned all of this stuff that I did if I didn't go through that. Because I probably would not have started hanging out with

> my friend that like got me into AIA and I probably wouldn't have had the same outlook because I just would have gotten everything I wanted kind of.

Joe said: "I wouldn't change it for anything even thought it was probably the hardest thing that I've ever gone through, and hopefully the hardest thing that I ever will go through. But I wouldn't change one thing about it." Norah had similar thoughts as Joe:

> it's horrible the whole state experience. I didn't do it expecting that I would be happy . . . but then . . . just looking back on the whole thing I don't think I would have changed anything about it . . . because I feel like I became so much more in so many other areas.

Frank gave a great deal of credit to his injury: "I really owe a lot to it and that basically is the foundation for the rest of my whole life. I felt every little thing stemmed back from there. Every day there's something that I've learned from that, so it's been a very huge impact."

Summary

Following in-depth interviews with 11 moderate to high growth Division I athletes, the transcripts were analyzed to produce 19 lower and higher order categories, and four general dimensions describing the SRG experience of the athletes in this study. Using the categories and dimensions, a conceptual model of SRG in Division I athletes was developed in an attempt to illustrate the dynamic nature of the growth process. The process was framed by athletes' life context, including pre-existing personal, cultural, and familial influences. Upon experiencing their most difficult sport stressor in the past 3 years, athletes underwent a cycle of disruption, characterized by struggles and attempts to work through the stress. Eventually the athletes experienced a variety of positive psychosocial outcomes. They reported an emotional "rebound" in which they felt happier

than during the height of their stress, as well as changes in their life philosophy, personal characteristics, and relationships. Finally, despite the difficulty of their stressor, the athletes had positive reflections of their experience.

CHAPTER 5

DISCUSSION

The purpose of this study was to gain an understanding of SRG in Division I athletes. An explanatory mixed methods design was used to investigate growth from both a quantitative and qualitative perspective. In this chapter, the findings are discussed in light of extant SRG and sport psychology research. The first section addresses the research questions from the quantitative phase of the study. This is followed by a focus on the research questions from the qualitative phase. The third and fourth sections include a presentation of the limitations of the study, as well as future directions for the examination of SRG in sport. Implications of the present investigation for coaches and sport psychologists are provided in the fifth section. The chapter concludes with a brief summary of the study.

Quantitative Phase

Three research questions guided the quantitative phase of this study: (a) How much SRG do Division I athletes report in response to sport stressors? (b) What is the relationship between stressor factors and cognitive appraisals, and SRG? and (c) What differences exist between Division I athletes on SRG? Each of these questions is addressed in the following sections.

How Much Growth?

The athletes' PTGI scores were lower than those found in many studies, including bereaved parents ($M = 3.89$; Polatinsky & Esprey, 2000), female victims of intimate partner violence ($M = 3.24$; Cobb et al., 2006), female breast cancer survivors ($M = 2.87$; Weiss, 2002), and college students ($M = 3.40$; Tedeschi & Calhoun, 1996). Given that the self-identified stressors in this study were far more benign than the stressors typically studied in conjunction with SRG (e.g., cancer, violence, disaster), it is not surprising that the scores were lower than those found in previous studies. Even the college students in the study by Tedeschi and Calhoun were selected on the basis of having experienced a "significant negative life event" in the recent past. SRG has been suggested as more likely to occur when the stressor is significant enough to shatter individuals' assumptions about the world (Tedeschi & Calhoun, 2004). However, it should be noted that the amount of growth reported by the athletes was not inconsequential ($M = 2.70$), and that participants in other studies have scored lower (male prostate cancer survivors, $M = 2.22$; Thornton & Perez, 2006). Moreover, almost 43% of the athletes reported a moderate to high level (i.e., 3.00-5.00) of SRG. Thus, the results from this study support the qualitative findings of Udry et al. (1997) and Podlog and Eklund (2006), and represent the first quantifiable evidence for positive growth following adversity in competitive athletes.

Relationships and Group Differences

Both linear and binary logistic regression analyses were used to identify relationships between stressor factors and cognitive appraisals, and SRG, and group differences on SRG. Although there was some disparity between the results of the two

tests, there were many similarities. The block of demographic variables accounted for a small, but significant amount of the variance in SRG. Of the demographic variables entered into the regression equations, sex and age were both significantly predictive of SRG. Similar to many previous studies of SRG (e.g., Kesimci et al., 2005; Milam, 2004), being a woman was a significant predictor of growth. Indeed, only 28% of the athletes who reported moderate to high growth were men.

The construct of gender role conflict (GRC) may provide some insight into differences in self-reported growth between male and female athletes. GRC occurs when socialized gender roles result in negative consequences such as restriction, devaluation, or violation of self or others (O'Neil, Good, & Holmes, 1995). Men who internalize societal messages for what it means to be a man may be unable, unwilling, or embarrassed to express their emotions (Wong & Rochlen, 2005). Given that sports are a domain in which dominant conceptions of masculinity are celebrated, the male athletes' scores on the PTGI may be a reflection of GRC and resulting emotional inexpressiveness (Messner & Stevens, 2002; Wong & Rochlen, 2005). Even the male athletes who did score high on growth were mostly unwilling to meet for a follow-up interview. Only three (11%) of the moderate to high growth men, as opposed to 40 (40%) of the moderate to high growth women signed that they would be interested in meeting for an interview. Another consequence of GRC and men's emotional inexpression is that they are less likely than women to seek out mental health services (Collier, 1982). Although the interviews for this study did not constitute a mental health intervention, perhaps the male athletes perceived them in this way.

Being older was a significant predictor of growth. Although previous studies have suggested that younger individuals report higher growth than older individuals, all of the athletes in this study were relatively young and within a discrete age bracket (i.e., 18-26). Perhaps due to a more fully developed frontal lobe of the brain, athletes in their early to mid-20s may have possessed a higher level of intellectual and cognitive maturity that allowed them to realize and understand the benefits that had come from their sport stress (Dennis, 2006; Milam et al., 2004). Two other demographic variables, years of playing experience and sport type, were only significant in the logistic regression. That is, having less years of playing experience, and being a team sport athlete were related to higher SRG. The former finding is unexpected, as it would seem that athletes with less experience would be younger, and younger athletes reported less growth. The finding that team sport athletes were more than twice as likely as individual sport athletes to report moderate to high growth is also surprising. Given that neither sport type nor years experience were significant predictors of growth in the linear regression, and that inspection of group differences in growth by sport type and simple correlations between growth and years experience revealed nonsignificant results, it seems likely that one or more variables had a confounding influence on these relationships.

Factors related to the stressor accounted for the largest amount of the variance in SRG. Specifically, athletes whose stressor was coded as being related to the negative aspects of competition and negative significant other relationships reported significantly *less* growth than athletes who did not report these stressors. As previously stated, SRG may be more likely to occur as the perceived severity of the stressor increases. It may be that competitive struggles and interpersonal conflicts do not threaten athletes'

assumptions about the world in ways that would allow them to experience growth (Janoff-Bulman, 1989). Interestingly, the Beta coefficient for the personal struggles stressor type was negative and nonsignificant. The lack of a positive relationship is somewhat surprising, as athletes who reported an injury as their most difficult stressor were included in the personal struggles group. Because injuries are among the most stressful events that athletes encounter, it might be expected that injured athletes would report more growth than athletes who reported other stressors. Of course, the injured athletes in this study may not have necessarily perceived their injury as being extremely stressful. Although the costs/demands of sport Beta coefficient was not significant, it did approach significance in a positive direction. The daily struggles of being a Division I athlete seemed to prompt the athletes to search for meaning in their experience. This finding supports that of Giacobbi et al. (2004), who found that first-year college swimmers interpreted the stress of transitioning into life as a student-athlete as an opportunity for growth. Regardless of the type of stressor experienced, SRG is more likely a result of individuals' appraisals of the event (Linley & Joseph, 2004).

The cognitive appraisal variables, or athletes' interpretations of the stressor, accounted for additional variance in SRG. In support of the contention that an event must be sufficiently stressful to promote growth, the perception of more stress at the time that the athletes completed the questionnaire was significantly predictive of growth. Although it may seem counter intuitive that the athletes would feel both stress *and* growth, researchers have suggested that the experience of growth does not necessarily indicate the absence of distress (Park & Fenster, 2004). In fact, some amount of enduring distress may even be necessary for growth to manifest (Tedeschi & Calhoun, 2004).

In support of the findings of Park et al. (1996; study 2), the secondary appraisal of control was significantly and positively related to growth. That is, athletes who believed that they were more in control over the occurrence of their stressful event were more likely to report growth. Individuals who perceive control over their stressor may be more likely to rely on adaptive coping strategies (Park & Fenster, 2004). However, this finding is somewhat perplexing, given that most of the athletes in the qualitative phase credited a higher power for guiding them through their experience. The issue of religion and spirituality will be discussed in more detail in a later section. Finally, in the linear regression only, feeling as though the stressor was more resolved was related to higher SRG. Perhaps the relationship between resolution and SRG was confounded by the amount of time that had passed since the stressor had ended. The latter variable was eliminated from the analyses because of a low response rate, but athletes who believed the stressor to be more resolved may have had more time to reflect on their experience and realize growth (Cordova et al., 2001).

Although clearly other constructs could have been measured that would have explained a higher proportion of the variance in SRG (e.g., coping, personality, spirituality, basic needs), the quantitative phase of the study provided the first glimpse of a heretofore unstudied aspect of the stress process for athletes. The regression analyses did reveal a few variables that should be considered in future studies of SRG in athletes (i.e., gender and cognitive appraisals). Perhaps more importantly, the quantitative phase provided a means by which to purposefully select several athletes of interest in order to learn more about their experiences of SRG.

Qualitative Phase

The qualitative phase of this study was guided by three research questions: (a) What are Division I athletes' experiences of stressful times/events in sport? (b) In what ways does growth manifest as a result of sport-stress for Division I athletes? and (c) What personal, environmental, and social mechanisms assist Division I athletes' perceptions of positive growth as a result of sport stress? Each of these questions is addressed in the following sections.

What are Athletes' Experiences of Stressful Times/Events in Sport?

Because SRG cannot occur in the absence of some stressful stimuli, it was important to first gain a sense for the athletes' stress experience. The stressors identified by the athletes as their most difficult in the past 3 years were consistent with previous literature on sources of stress in college athletes (Giacobbi et al., 2004; Tracey & Cortlett, 1995; Wilson & Pritchard, 2005). The athletes cited both acute stressors such as injury, and chronic stressors such as performance expectations as being their most stressful. Despite the variety of stressors discussed by the athletes, an overarching process emerged in the form of disruption and social support.

The disruption cycle shown in the conceptual model of SRG is similar to other models of resilience and SRG (see Galli & Vealey, 2008; Richardson, 2002; Tedeschi & Calhoun, 2004). All of these models describe the occurrence of a stressor as a "disruption" or "seismic event" that serves to send individuals into a state of biopsychospiritual disarray. The disruption of the athletes in this study was characterized

by a cycle of struggling and working through the stressor. The athletes noted how "hard" the stressor was on them physically, mentally, and emotionally, as well as their attempts to combat the stress by having a positive attitude, being motivated, and actively coping. Similar to most other studies of coping in sport, the diversity of coping strategies used even within the same participant lends support for a process model of coping (Nicholls & Polman, 2007). Important others such as family, friends, teammates, and coaches offered encouragement and advice that facilitated the cycle. The importance of social support in helping athletes to manage stress has been noted by sport psychology researchers (Hardy, Richman, & Rosenfeld, 1991; Rees & Hardy, 2000; Rees et al., 2003). Thus, the answer to the first qualitative research question revealed little new knowledge regarding the stress and coping experiences of Division I athletes. However, the perceived psychosocial outcomes provoked by the stressor provided considerable insight into the positive side of stress for athletes.

In What Ways Does Growth Manifest?

The interview findings confirmed the results of the PTGI in that the athletes perceived high levels of personal growth as a result of their stress experience. The identified areas of growth (i.e., new life philosophy, self changes, and interpersonal changes) are all strongly supported in the SRG literature (Calhoun & Tedeschi, 2006; Sanghee & Youngkill, 2008; Woodward & Joseph, 2003). Although prior sport psychology research has provided preliminary evidence that many athletes do perceive positive change in response to sport adversity (e.g., Galli & Vealey, 2008; Podlog & Eklund, 2006; Udry et al., 1997), this study adds breadth to our understanding of the particular ways that athletes achieve personal growth. Whereas the reports of growth in

the Podlog and Eklund and Udry et al. studies centered mainly on personal improvements, the athletes in this study noted important philosophical and relational changes that extended beyond sport.

Although the athletes were prompted to reflect on specific domains of change on the PTGI, the depth with which most of the athletes were able to discuss their changes makes it unlikely that they were merely providing socially desirable responses. Moreover, the athletes revealed areas of growth that are not often included in traditional conceptions of SRG, and that were not directly measured on the PTGI. First, they believed that they were generally more responsible and more effective in activities of daily living than before their stressor. The finding of improved life functioning may in part be explained by the developmental challenges with which most of the athletes were negotiating. The late teens and early 20s are a time when individuals are attempting to develop their identity, become independent, and form intimate relationships (Erikson, 1950; Santrock, 1999). Thus, as opposed to the more mature individuals who are often studied in SRG research, it would seem that individuals who are transitioning from adolescence to young adulthood are ripe for experiencing SRG related to having better time management, being more responsible, and gaining better academic/occupational skills.

The second nontraditional area of growth discussed by the athletes was altruism. Although relationship changes are a core domain of SRG, altruism and altruistic acts are not commonly reported by individuals in studies of growth. Calhoun and Tedeschi (2006) noted that although an increase in compassion for others is often reported in conjunction with growth, there is no empirical evidence suggesting that it translates into altruistic

acts. The team environment surrounding college athletes may encourage them to put their newfound compassion into action, especially by serving as mentors for younger team members.

What Mechanisms Assist Athletes' Perceptions of Positive Growth?

Perhaps the most difficult, but most important question to answer about SRG is "how does it happen?" Taken together with previous research, the results do offer some insight into the variables that play a key role in the occurrence of SRG. Athletes' previous background and struggles were discussed as shaping their character, and preparing them to successfully manage the stressor that was the focus of this study. In support of Galli and Vealey (2008), prior cultural, familial, and sport struggles were viewed as growth producing experiences in themselves. This finding underscores the importance of considering the personal and sociocultural context for SRG. Perceptions of no or low growth by athletes following stress should not be taken as a personal "problem," but rather as a product of years of interactions between individuals and the sociocultural systems within which they operate. Our understanding of SRG in racially and ethnically diverse populations is still sorely lacking, and future studies should address this gap in the literature (Blankenship, 1998).

Many of the athletes interviewed self-identified as being positive or optimistic in general. Both optimism and positive affect have been shown to relate to SRG (Milam, 2004; Park et al., 2008). Optimists may be more likely to appraise stressful events as challenges, and engage in approach coping strategies such as positive reappraisal (Nes & Segerstrom, 2006; Tedeschi & Calhoun, 2004). Indeed, the athletes did report using a number of approach-type coping strategies such as seeking social support and positively

reinterpreting the stressor. The direct and indirect effects of optimism should be examined in future investigations of SRG in athletes.

Coping efforts were another critical piece of athletes' experience. As discussed previously, the athletes discussed using a variety of coping strategies to handle their stress. Positive reappraisal and religious-based coping strategies such as prayer were most notable among the strategies employed. The use of positive reappraisal by the athletes to reinterpret their stress was not surprising, given the strong link between reinterpretation coping and SRG (Park et al., 1996). Being able to find the "good" in the "bad" may be an important preliminary step in actually achieving growth.

Relying on religious practices to cope with stress was common among the athletes. Religiousness and spirituality have been suggested to provide an impetus for SRG through two mechanisms: (a) as a result of the social support that may come from being a member of a given religion, and (b) as a result of the intrinsic sense of meaning, purpose, and coherence that religion provides (Shaw, Joseph, & Linley, 2005). Indeed, the athletes were often able to perceive meaning in their stress through their relationship with God, and take solace that a higher power was watching over them and guiding them as they worked through their stress. This finding seems to contradict the significant relationship between SRG and perceptions of control over the occurrence of the stressor. However, feelings of personal control and of releasing control to a higher power may not be mutually exclusive. Perhaps it is important for athletes to feel in control at the outset of a given stressor so that they can choose active rather than avoidance coping strategies. However, as they struggle and work through the stress, it is helpful to trust that a higher power has control, or as one athlete said, is an "author" to their lives. Sport psychology

researchers interested in the link between spirituality and athletes' sport experience would be wise to consider SRG as a potential outcome of the stress and coping process. Specifically, longitudinal designs should be employed to demonstrate the relative changes in appraisals of control, spirituality, and religious coping strategies across the duration of the stress experience.

As previously discussed, underlying the disruption cycle were family, friends, teammates, and coaches who were critical in supporting the athletes as they worked through their struggles. Social support has been suggested as important in models of SRG and resilience (see Richardson, 2002; Tedeschi & Calhoun, 2004). Supportive others can provide a way for athletes to craft narratives about their experience, and offer perspectives that the athletes can use to grow. Social support may be particularly important for promoting growth in the domain of changed relationships, as many of the athletes cited improved relationships with those who provided them with support during their most stressful period. However, sport psychology researchers have found that when the wrong form of support is delivered, and/or support is delivered at inopportune times, other individuals helping attempts can actually have a detrimental effect on athletes (Rees et al., 2003; Udry et al., 1997). Future research is needed to gain a better understanding of the type and timing of social support that leads to growth in athletes.

The results of this study suggest that athletes' personal and sociocultural life experiences, having a positive disposition, and engaging in approach-type coping strategies are mechanisms through which growth occurs. It is likely that these factors work together to facilitate SRG. Indeed, previous research has shown strong support for a model of growth that features coping as a mediator between personality, appraisals, and

SRG (Park & Fenster, 2004). SRG would seem to be a valuable addition to the growing body of literature on stress and coping in sport, as most researchers have focused on coping effectiveness as the alleviation of negative emotions, rather than coping effectiveness as an impetus for emotional growth (Nicholls & Polman, 2007).

Perhaps most notable was the finding that it is not the stressor per se that brings about SRG, but athletes' attempts to work through and make meaning of their stress (Tedeschi & Calhoun, 2004). Support was found for the notion that growth arises out of both automatic and deliberate ruminative activity aimed at reconciling discrepancies between pre- and poststressor goals, beliefs, and assumptions (Joseph & Linley, 2005; Tedeschi & Calhoun). Although the negative thoughts and emotions discussed by the athletes were no doubt unpleasant, they represented initial cognitive activity aimed at making sense of the stressor and creating a new worldview. Though the retrospective nature of this study limits what could be learned about the role of cognitive processing and rumination in athletes' growth, these preliminary findings may serve as a catalyst for future studies of SRG in athletes. Of particular interest are the types of cognitive activity that lead to specific areas of growth, and the optimal timing of their occurrence.

Limitations

Despite the insights gained into the positive outcomes of stress in Division I athletes, this investigation suffered several limitations. First, the quantitative sample was not representative of the population of Division I athletes, thus limiting the generalizibility of these findings. Specifically, males were largely underrepresented (less than 30% of the total sample). Given the apparent differences that exist between males and females in their readiness to experience SRG, the results would likely have been

different with a more equal proportion of male and female athletes. Further, the athletes in this study were drawn from a state with a high proportion of members of the Church of Jesus Christ of Latter-day Saints (LDS). One of the universities has a particularly strong tradition of fulfilling the mission of the LDS church. Indeed, 7 of the 11 athletes interviewed identified as being members of the LDS church. It would be interesting to know whether Division I athletes in different regions of the country would report religion and spirituality as a strong component of their stress experience, or whether different factors play a larger role in the occurrence of SRG.

A second limitation of this study relates to the presence of a multitude of measurement issues. The validity and reliability of single-item measures of cognitive appraisals is questionable. Although the use of a valid and reliable measure of appraisals such as Peacock and Wong's (1990) Stress Appraisal Measure would have been preferable, the limited availability of the athletes made longer questionnaire packets unfeasible. Several of the questions related to stressor factors (e.g., stressor duration, time since stressor) were eliminated from the analyses due to low response rates. It is likely that many of the athletes chose not to respond because they had difficulty pinpointing the exact length of time as requested in the questionnaire. A more realistic format for these questions might have been to provide the athletes with several predetermined time durations (e.g., < 1 year, 1-3 years, 3-5 years), and allow them to select the duration that best fit with their experience. Although some data would be lost with this method, it might encourage a higher response rate.

Another limitation in measurement was the arbitrary criterion for deciding which athletes did and did not report growth. Is it correct to believe that athletes who score a 63

on the PTGI experience appreciably more growth than athletes who score a 59? A better strategy for future studies might be to select athletes whose scores are in the upper 5 or 10% range. An even more serious issue is whether self-report measures of SRG such as the PTGI are indicative of actual growth, or some combination of social desirability, self-enhancement, and positive reappraisal. Some evidence suggests that individuals are often poor judges of how they were before the occurrence of a given event, and tend to derogate their "former" selves (McFarland & Alvaro, 2000). A more intriguing possibility is that many individuals, and perhaps especially competitive athletes, are socialized to believe that rising up from their struggles and being better than before is the "American way." Thus, reports of growth may be no more than the result of individuals following a "cultural script" demanding that individuals grow and learn from their struggles (Frazier & Kaler, 2006).

As previously suggested, another possibility is that the reports of growth in the present study were more indicative of the normal developmental processes that take place during late adolescence and early adulthood than SRG due to a particular stressor. It may be that SRG occurs through different mechanisms depending on whether the stress is less severe and cumulative over time (e.g., transitioning into life as a student-athlete), or more acute and severe (e.g., career ending injury). Of course, attempts to distinguish veridical from illusory growth may be futile, as *perceptions* of growth may be most important for well-being (Park & Lechner, 2006). Regardless, the design of future studies should allow for the examination of plausible rival hypotheses for growth, as well as the comparison of the psychological adjustment of individuals who experience veridical versus illusory growth.

A final limitation of this study became apparent during the qualitative phase. Although all of the athletes in the qualitative phase reported at least moderate growth on the PTGI, 3 of these athletes had difficulty understanding the nature of the questions during the interview. As mentioned previously, one of the interviewees was ultimately eliminated from the study due to the athlete admitting that she "didn't know what she was thinking" while completing the questionnaire. Because only a small percentage of the athletes were interviewed, it is unknown exactly how many of the athletes failed to comprehend the PTGI. However, it is safe to assume that a fair share of the athletes did not truly understand the frame of reference from which they were to answer the questions on the PTGI (i.e., reflecting on how they had changed as compared to *before* a given stressful incident occurred). It may have been that the stressors discussed were not sufficient to create a sense of "my life before [stressor]" and "my life after [stressor]" for the athletes. Indeed, nearly all of the athletes struggled to remember what they had chosen as their most difficult stressor during the quantitative phase. SRG researchers can guard against misunderstanding in their participants by (a) ensuring that athletes fully understand the instructions of the questionnaire, including the correct frame of reference to consider when answering each item; (b) using a measure of social desirability to assess the extent to which athletes are merely providing responses that they believe will portray them in a positive manner; and (c) preselecting athletes for study who have experienced stressors of a more serious nature (e.g., season ending injury, death of a teammate).

Future Directions

In light of the findings from the present investigation, and the weaknesses associated with this study, several recommendations can be made for future research on

SRG in sport. First, mediational models with SRG as the outcome should be tested using theoretically relevant constructs. For example, the conceptual model developed in this study can be used as a starting point for examining relationships between personal qualities, cognitive appraisals, coping, and growth. Prospective designs must be adopted in order to truly evaluate the extent to which individuals have changed from before a given stressor. Although it will be a challenge to sample athletes *before* a given stressor has occurred, perhaps researchers could work with athletic trainers and other members of athletes' wellness support team to identify athletes who are at-risk for certain adversities such as injury.

A second recommendation for future studies of SRG in sport has been broached previously, but is worth further consideration. That is, steps should be taken to assess the validity of self-reported growth on measures such as the PTGI. Park and Lechner (2006) suggested a number of strategies for ensuring the validity of self-reported growth, including the use of longitudinal research designs, informant reports of growth, and triangulation of measurements (e.g., questionnaire and an interview). The latter strategy was used in this study, but informant reports with teammates and coaches may be a worthwhile strategy for future studies.

Finally, future research should examine SRG in the context of specific sport stressors such as injury, burnout, and transition. Although this study showed that there are many similarities in growth across stressors, there are also likely a variety of differences. SRG might be a particularly interesting concept to consider in relation to the injury recovery process, as researchers are just beginning to understand the psychosocial adjustment that takes place for athletes from the time of injury to the time that they return

to competition (Podlog & Eklund, 2006). Researchers who investigate burnout may also be interested in incorporating an SRG perspective into their studies, as many of the athletes in the present study noted achieving psychological growth in response to the demands of sport. In this way, SRG may be seen as an opposing outcome to burnout, and studies should be designed to test the different pathways through which each outcome may occur.

Applied Implications

The findings of this study have important implications for sport psychology researchers, coaches, and sport psychology consultants. First, the results support the notion that sports can build character (Solomon, 1997), "heart" (Bell & Suggs, 1998), and resilience (Galli & Vealey, 2008) in participants. Sports provide unique opportunities for individuals to learn, grow, and develop, in part through the experience of stressful and sometimes traumatic situations. Of course, growth does not occur automatically, but only in the context of important personal, sociocultural, spiritual, and environmental characteristics. Although the present study dealt with college-aged athletes, researchers would be wise to carefully study the optimal circumstances under which SRG occurs (and fails to occur) in youth and adolescent athletes. The results of such studies could be used to inform coaching and parent education programs aimed at optimizing the sport experience of girls and boys.

Coaches may play a vital role in the growth experience of their athletes by providing emotional support and encouragement during adverse times. For example, showing injured athletes that they are still valued members of the team, including them in team functions, and talking with them on a regular basis may aid in the meaning-making

process for athletes, and eventually lead them to develop new and improved coping strategies and perspectives. Coaches of youth athletes may facilitate growth by creating a motivational climate conducive to satisfying the basic needs of competence, autonomy, and relatedness before, during, and after the occurrence of stressful events in sport. Satisfaction of the three basic needs may result in athletes who are intrinsically motivated toward growth. Coaches may promote competence by using a proper teaching progression when introducing new skills to athletes. Autonomy can be fostered by allowing the athletes to lead warm-ups or allowing them to choose between 2-3 pre-selected drills. Finally, coaches may create a sense of relatedness by actively listening to their athletes, and organizing team socials.

Upon learning of the analogy between physical overload and psychological overload, coaches of Division I and other higher level teams may be tempted to induce SRG by creating intentionally stressful situations for athletes to overcome (e.g., placing unrealistic physical demands on their athletes, verbally chastising players for making a mistake). Although coaches may view such actions as having a "toughening" effect on their athletes, much empirical investigation awaits before coaches can be advised to "take growth into their own hands." Coaches are likely best served to facilitate the growth process by being a source of support for athletes when inevitable stressors occur.

Clinical and educational sport psychologists are often charged with helping athletes negotiate stressful competitive and noncompetitive circumstances. Sport psychologists who adopt an athlete-centered approach to consulting might be especially interested in promoting SRG in their athletes (Miller & Kerr, 2002). Joseph and Linley (2006) offered several guidelines for practitioners that can easily be applied to sport

psychologists and their clients. First, sport psychologists should recognize the potential for growth in their athletes following stressful events. Unless practitioners are aware of the possibility of SRG, they will be ineffective in facilitating the growth process. Second, in attempting to facilitate growth, practitioners should never suggest to athletes that there is anything inherently positive about the stressor itself. If practitioners do believe that it is necessary to discuss the possibility of growth with their athletes, they should make it clear that positive benefits do not originate from the stressor itself, but rather from the athletes struggles and active attempts to work through and make sense of the stressor. Third, practitioners should be careful not to *push* growth. Instead, they should facilitate the process of meaning-making by helping athletes to "reintegrate self with experience" (Joseph & Linley, 2006, p. 1049). Practitioners can facilitate reintegration by listening to their athletes attentively and actively, and helping them to articulate new meanings as they surface (Calhoun & Tedeschi, 1999).

The results of this study indicate that sport psychologists can work with athletes on a number of specific strategies that may assist in the growth process. Approach-focused coping strategies in which athletes engage in active efforts to manage their emotions and solve problems should be promoted. Traditional cognitive behavioral interventions aimed at teaching athletes to reframe their self-talk may be useful in readying athletes to realize benefits from their stress. Athletes may be asked to reflect on stressors that they have overcome in the past, and the positive benefits that may have come from their stress experience. Reminding athletes of the personal strengths that allowed them to grow from previous adversities may give them the confidence and motivation to grow in response to future sport adversities. Sport psychologists may assist

athletes in developing their support network, and encourage them to seek social support from trusted family, friends, coaches, and teammates. Another strategy that sport psychologists may wish to employ with their athletes is journaling. Researchers have found that having individuals attempt to make sense of their stressor through writing was related to better health outcomes and more SRG (Park & Blumberg, 2002; Ullrich & Lutgendorf, 2002). Finally, practitioners may need to be even more persistent in their attempts to promote SRG in male athletes, as males may be less likely than females to manage their stress in ways that lead to growth.

Summary

Although researchers in general psychology have been interested in the positive psychological consequences of stress for the past two decades, scant research has been focused on SRG in the context of competitive sports. The Division I intercollegiate athletes in the quantitative phase of the present study reported a small to moderate amount of growth in response to their most difficult sport stressor in the past 3 years. In-depth interviews with a subset of the larger sample supported prior research, and revealed that SRG occurs as a result of active efforts by athletes to work through their struggles. Growth manifested in a new life philosophy, self changes, and interpersonal changes. The conceptual model developed from this study can be used as a starting point for researchers who wish to quantitatively examine the pathways for growth, and/or study SRG in specific subgroups of athletes. Practitioners should facilitate the growth process for athletes by actively listening, suggesting approach-focused coping strategies, and helping them to construct a strong network of social support.

APPENDIX A

DEMOGRAPHIC, STRESSOR-RELATED, AND COGNITIVE APPRAISAL QUESTIONS

1. **Date of Birth (mm/day/yy)** _____

2. **Sex** _____Female _____Male

3. **Race**

____ African-American

____ Asian-American

____ Caucasian

____ Hispanic

____ Native American

____ Polynesian

Other (please write)_____

4. **Primary current sport** _____

5. **Total years played this sport** _____

6. **Current level of sport participation (check one)**

____ Intercollegiate

____ National

____ International

____ Professional

7. **If you are an intercollegiate athlete, what university do you compete for? (check one)**

____ University of Utah

____ Brigham Young University

____ Utah Valley University

8. **Think about your sport participation over the past three years. In the space below, please indicate the most difficult stressor, or most stressful event that you have faced in sport during this time period. This may be something positive or something negative.**

_____

_____

9. **Are you still currently experiencing this stressor?** Yes No

10. **If you answered "No," to question 10, approximately how long ago did this stressor end?**_____

11. **Approximately how long did/has this stressor last(ed)?** _____

12. **Before this stressor, how many times had you ever experienced a similar stressor?**_____

13. **Before this stressor, how many people do you know who had ever experienced a similar stressor?** _____

14. **In comparison to how much stress you usually feel, how stressful was this stressor when it occurred?**

Not at all stressful *Extremely stressful*

1 2 3 4 5 6 7

15. **How stressful is this stressor currently?**

Not at all stressful *Extremely stressful*

1 2 3 4 5 6 7

16. **How successful were you in coping with this stressor?**

Not at all successful *Extremely successful*

1 2 3 4 5 6 7

17. **How aware were you that this stressor was going to occur?**

Not at all aware *Extremely aware*

1 2 3 4 5 6 7

18. **How much control did you have over the occurrence of this stressor?**

No control at all *Complete control*

1 2 3 4 5 6 7

19. **To what extent has this stressor been resolved?**

Not resolved at all						*Completely resolved*
1	2	3	4	5	6	7

APPENDIX B

THE POSTTRAUMATIC GROWTH INVENTORY

For each item, circle the number that most closely describes the degree to which the change indicated occurred in your life as a result of your most difficult sport stressor in the past three years.

0= I did not experience this change as a result of my stressor.
1= I experienced this change to a very small degree as a result of my stressor.
2= I experienced this change to a small degree as a result of my stressor.
3= I experienced this change to a moderate degree as a result of my stressor.
4= I experienced this change to a great degree as a result of my stressor.
5= I experienced this change to a very great degree as a result of my stressor.

1. I changed my priorities about what is important in life.	0	1	2	3	4	5
2. I have a greater appreciation for the value of my own life.	0	1	2	3	4	5
3. I developed new interests.	0	1	2	3	4	5
4. I have a greater feeling of self-reliance.	0	1	2	3	4	5
5. I have a better understanding of spiritual matters.	0	1	2	3	4	5
6. I more clearly see that I can count on people in times of trouble.	0	1	2	3	4	5
7. I established a new path for my life.	0	1	2	3	4	5
8. I have a greater sense of closeness with others.	0	1	2	3	4	5
9. I am more willing to express my emotions.	0	1	2	3	4	5
10. I know better that I can handle difficulties.	0	1	2	3	4	5
11. I am able to do better things with my life.	0	1	2	3	4	5
12. I am better able to accept the way things work out.	0	1	2	3	4	5
13. I can better appreciate each day.	0	1	2	3	4	5

14. New opportunities are available which wouldn't have been otherwise.	0	1	2	3	4	5
15. I have more compassion for others.	0	1	2	3	4	5
16. I put more effort into my relationships.	0	1	2	3	4	5
17. I am more likely to try to change things which need changing.	0	1	2	3	4	5
18. I have a stronger religious faith.	0	1	2	3	4	5
19. I discovered that I'm stronger than I thought I was.	0	1	2	3	4	5
20. I learned a great deal about how wonderful people are.	0	1	2	3	4	5
21. I better accept needing others.	0	1	2	3	4	5

APPENDIX C

INTERVIEW GUIDE

The researcher used the first 5-10 minutes to build rapport and discuss the purpose of the study, procedure, confidentiality, and length of the interview. He explained to the participant that the study is voluntary and they could withdraw at anytime. In addition, the researcher asked permission to audio-record the interview, and explained the purpose of recording the interview.

Rapport Questions

- Favorite thing about your sport?

- Proudest accomplishment?

- Hardest part of your sport?

Study Questions

1. You identified _____ as your biggest sport stressor in the past three years. Can you describe this stressor to me?

2. What made this event so stressful? In other words, what factors contributed to your stress?

3. Can you tell me about your thoughts and feelings related to the stressor?

4. In what ways, if any, do you feel that you have changed as a result of this stressor?
   Probes:
   - Personal
   - Spiritual
   - Competitive
   - Perspective, viewpoints, outlook
   - Relationships

5. How have you grown because of this stressor?
   Probes:
   - Performance
   - Relationships

- Academics
- Coping
- Affect

6. What things were most helpful in allowing you to grow?
   Probes:
   - Personality
   - Other people
   - Coping strategies
   - Event factors

7. Is there anything else you can add that might help me to better understand your experience with this stressor?

APPENDIX D

CONTACT SUMMARY FORM

Participant Name: _____

Interview Site: _____

Participant Contact Info: _____

Interview Date: _____

Interview Duration: _____

1. What were the main issues or themes that struck you in this contact?

2. What did you do well as an interviewer?

3. What could you improve upon for next time?

4. Any other specifics about this contact/interviewee/interview:

APPENDIX E

AUDIT TRAIL

September/October 2008

Still collecting and entering data. Created new variables for total PTGI, subscale PTGI scores, and a variable called "growth" that assigns a 0 to those whose PTGI total is under 63, and a 1 to those whose PTGI total is 63 or higher. I run this syntax after every data entry session. Created a master list of individuals who both meet the PTGI criterion (63) and agreed to be contacted for an interview.

Early November 2008

Ran frequencies on the id# to check for duplicate cases. After starting with a sample size of 344, 24 duplicates were confirmed and eliminated, dropping sample size to 320.

November 2, 2008

E-mailed all prospective interviewees from the master list (44). Two participants did not provide an e-mail address. All but four on the list are female. I need to try and get all four guys!

November 6, 2008

Used syntax to compute participants' age based on their DOB. SPSS does not allow missing values for date fields, so some values remain blank.

November 10, 2008

Have received replies from seven participants (all female, none scored 90 or higher). Sent a follow-up e-mail to the four males and the people who scored 90 or above.

11/11/08

1. Ran frequencies on all variables. Discovered some data entry errors which I then corrected based on the raw data. Eight individuals had incorrect DOB's and ages. I have contact info for two of these individuals (178 and 253), and will e-mail them for their correct DOB. I e-mailed them on 11/11.

2. Ran histograms, box plots, and cross tabs on relevant variables

3. Re-entered a random sample of 10% (32) cases. Discovered some data entry errors, although not a significant amount. I corrected these errors based on the raw data.

4. Re-ran syntax for PTGI total score. Found 13 cases that did not have a score because they were missing responses to one or more items. One of these cases (250) was eliminated because they left the entire PTGI blank. This drops my sample size from 320 to 319. Another case was incorrectly entered. This leaves me with 11 cases that have at least one blank item on the PTGI. Only four of these (017, 167, 188, and 243) had the potential to score 63 or higher, only two of these four (017 and 188) are male, and only one of the two males (188) agreed to be contacted for an interview. I have e-mailed him with the last item and asked him to respond (0-5). If he responds with a 2, 3, 4, or 5, I will invite him for an interview. Below is a list of items and case numbers of individuals who have blank responses on those items. Given that my sample size far exceeds what I need, and the fact that such a small amount of data is missing, I may choose to casewise delete these 11 individuals. I need to speak with Dr. Shultz on this.

#1 – 017
missing data
#2 – 007, 027
#3 - 128
#4 – 083
#9 – 128, 167
#11 – 128
#14 - 243
#16 – 147
#17 – 228, 281

007, 017, 027, 083, 128, 147, 167, 228, 243, 281 all on PTGI

5. Hertel (1976) suggests eliminating variables with 15% or more of participants missing data on that variable. I have four "problem" variables – #10, 11, 12, & 13. Must have at least 270 cases on a given variable for it to be usable. I only have 113 cases for #10, 230 cases for #12, and 169 cases for #13. I need to speak with Dr. Shultz on this.

11/12/08

1. Heard back from both individuals regarding their DOB, and from #188 who was a male and missing one item from the PTGI. He responded with a 5, putting his total score at 66, and making him eligible for an interview. I invited him for one and am awaiting his reply

2. Based on the random sample of 32 questionnaires I re-entered yesterday, today I am beginning to double check all 319 PTGI questionnaires. **099 is a potential drop (all 0's).** I completed through 120. There were a minimal amount of errors.

11/13/08

1. **225 is a potential drop.** Double checked 121-241.

11/15/08

1. **325 is a potential drop due to pattern of PTGI responses (literally).**

2. Most PTGI's looked good!

12/10/08

1. Eliminated 325 due to suspicious response pattern

2. Eliminated 225 due to all 0's

3. Coding open-ended stressor question

1/8/09

1. Refined stressor type categories

1/9/09

1. To handle missing data on the PTGI – used the average score of participant's responses on the remaining items for the subscale.

007: missing #2 (appreciation for life subscale), filled in with the average of #1 and #13 = (1 + 2)/2 = 1.5

017: missing #1 (appreciation for life subscale), filled in with the average of #2 and #13 = (3 + 4)/2 = 3.5

027: missing #2 (appreciation for life subscale), filled in with the average of #1 and #13 = (0 + 0)/2 = 0

083: missing #4 (personal strength subscale), filled in with average of #10, 12, and 19 = (0 + 0 + 2)/3 = .67

128: missing #3 (new possibilities subscale), 9 (relating to others subscale), and 11 (new possibilities subscale), filled in #3 and #11 with average of 7, 14, and 17 = (1 + 3 + 4)/3 = 2.67. Filled in #9 with average of #6, 8, 15, 16, and 20 = (2 + 1 + 2 + 2 + 1)/5 = 1.6

147: missing #16 (relating with others subscale), filled in with average of #6, 8, 9, 15, and 20 = (2 + 0 + 0 + 3 + 0)/5 = 1

167: missing #9 (relating to others subscale), filled in with the average of #6, 8, 15, 16, and 20 = (2 + 3 + 3 + 2 + 3)/5 = 2.6

228: missing #17 (new possibilities subscale), filled in with average of #3, 7, 11, and 14 = (0 + 1 + 0 + 0)/4 = .25

243: missing #14 (new possibilities subscale), filled in with average of #3, 7, 11, and 17 = (3 + 3 + 3 + 2)/4 = 2.75

281: missing #17 (new possibilities subscale), filled in with average of #3, 7, 11, and 14 = (1 + 0 + 3 + 4)/4 = 2

2. Eliminated #099 due to all 0's – now have 316 cases

3. Need to check assumptions underlying regression

1. Representative sample: No – my study purports to investigate stress-related growth in high-level athletes. However, I will only be able to generalize my findings to Division I athletes in Salt Lake and Utah counties.

2. Normal distribution of all variables (use histograms and calculate skewness and kurtosis coefficients to find this): No – many of my IV's are positively skewed. I tried power transformations and the date are *still* skewed!

3. Homoscedasticity:

4. Linear relationships:

4. Need to dummy code nominal variables before continuing with assumption testing

<u>1/15/09</u>

1. Cross-checked Sonya's codes with 15% of mine for the open-ended question. Only 69% agreement!

2. Refined categories. Eliminated "Event," and "Pressure."

3. Re-named "School" to "Academic Performance" and "Time Management" to "Balancing School and Sport."

4. Made a new category called "Choosing a College/Recruitment"

5. Worked more on data transformations. Everything is normal now, but difficult to interpret!

6. Most relationships between IV's and PTGI total are non-linear

7. Began dummy coding categorical variables for inclusion in regressions (finished race, started university)

Next time – finish dummy coding, run multiple regression (check for multicollinearity), start looking into logistic regression

1/21/09

- Cross checked my codes with Sones. Still low agreement. Re-visited my categories and decided to put all quotes that were in categories with 3 or less in the "Other" category. Lost "Fitness," "Equipment," "Health," "Physical," "Crowd," "Practice." Combined "Pressures" and "Expectations."

1/22/09

- Continued revising categories. Now have 17 total. Added "Physical Health." Eliminated "Illness."

- Dummy Coding is complete!

- Need to use effect coding instead of dummy coding ☹

- Got effect coding finished

- ANOVA results don't show much for categorical variables (university, race, sport, stressor type)

1/29/09

- Met with Dr. Shultz yesterday. He is going to look into effect coding for me. He suggests basing my coding decisions for sport type and stressor type on theory/previous research. I think I will use Scanlan et al (1991) for stressor type (negative aspects of competition, negative significant-other relationships, demands or costs of sport, personal struggles, traumatic experiences). For sport type, I will go with team vs. individual.

- He also suggests running FA on both sport and stressor and seeing what I come up with.

- He suggests running the analyses with the transformed variables and running it again without. If there are major differences, go with the transformed data. If not, go with the non transformed data. Non-parametric test? Can't find one.

2/3/09

- Worked on coding stressors according to Scanlan et al. article. Seems to be working well, although several stressors related to school and transition are difficult to code based on this system.

2/4/09

- In exploring my data, I find that 95% of my sample are DI athletes. Would it be wise to eliminate the other 5% of my sample for the purposes of my analysis? Especially since all of my interviews are with college athletes.

- I have finished coding stressor type and am fairly satisfied that the categories fit the stressors experienced by these athletes.

- I have run several multiple regressions:
    1. With all predictors (non-transformed variables)
    2. With all predictors (transformed variables)
    3. Without time variables (non-transformed variables)
    4. Without time variables (transformed variables)

After examining the results, it seems that the time variables don't add much to the analysis, and I'm missing so many cases on several of these they are messing things up. Model with time variables does have a larger R and R squared, but adjusted R squared is similar and the model with time variables is not significant. Is this enough justification to not include them in the analysis?

- Need to examine normality by creating a histogram of the residuals. Looks good!

- Examined multicollinearity by looking at tolerance and VIF. Tolerance is high, which is a good thing. Looks good!

- Used Mahal Distance to search for outliers. Only one case with D < .001 (#189). Don't know why though!

- Need to examine Homoscedasticity by plotting unstandardized residuals against predicted values. This graph looked good.

- I also graphed the unstand res against age, years in sport, and the six appraisal variables. The only one that looked good was years. The six appraisal variables only had a range of 1-7, so not much variability.

- "Still experiencing" (315 cases) and "stressor duration" (307 cases) should actually still be included. They don't add anything to the model though.

- Logistic regression next!

2/9/09

- Can dichotomize race into "White" vs. "Ethnic Minority"

- Need to ask Dr. Shultz about effect coding, eliminating non-college athletes, logistic regression

2/11/09

Quan
I met with Dr. Shultz today and he seems ok with my quantitative analysis. I'm going to go with the multiple regression that excludes the four IV's with low N's, and does not use transformed variables. I'm not explaining much variance (10-15% with 17 variables), but at least the model is significant. The key factor is that the data is stable (similar variables are significant across different analyses). Age (older), sex (female), control (more), resolved (more), current stressfulness (more), and the stressor type "Negative aspects of competition" (not that type) all contribute significantly to the prediction of SRG in my athletes. I can also use effect coding, and should eliminate the 14 non-college athletes in my sample. I'd like to get Sones to cross-check my coding of the stressor types according to the Scanlan article.

The logistic regression showed similar results, but I still need to figure out what to report and how to report it!

Qual
Major themes that Sones and I are seeing so far – Motivation, Spirituality, Character Development, Social Support

Participants have been slow to reply to my participant checks. I may have to make some phone calls to ask them to please check their e-mail and respond.

Well, all ten interviews have been completed. They averaged between 30 and 40 minutes each, and included 7 females and 3 males (a split consistent with the quantitative data). I have one softball player, one swimmer, one gymnast, one thrower, four cross-country runners, and two sprinters. I have eight White athletes, and two Black athletes. All of the interviewees were college athletes, again consistent with my quantitative sample. Most scored in the upper 25% of all participants on the PTGI, but a few were in the low to mid-60's. Three U of U athletes, four UVU athletes, and three BYU athletes in the sample. Average age is probably in the early 20's. Three athletes discussed an injury, one athlete cited depression, three athletes talked about balancing school and sports, one athlete talked about a poor performance at a big meet, and one athlete talked about changing sports.

In the future I'd like to focus in on a sub-group of athletes (e.g., season ending injury), and conduct multiple interviews across time with them, from the point of injury to several

months out. It would also be good to get some prospective data on them *before* the injury actually occurs.

2/13/09
I skyped with Sones today about #3. Things are getting complicated with the themes! I need to sit down and seriously consider refining many of the families before we meet about #4! J

Jordan, Kastin, and Ashley have all gotten back to me about their transcripts and are ok with what was typed. I still need to hear from Emily, William, and Sylvia, and get pseudonyms from all of them.

2/16/09-2/17/09
After analyzing three transcripts, I've begun refining my themes the "old fashioned" way by writing all of my codes on index cards and sorting them by hand. Although it's more work, I also feel a lot closer to the data this way. I'm beginning to see patterns of relationships between the themes that I didn't see before.
I've decided that I'm just going to go ahead and set up two more interviews to bolster my data. If I wait until all ten are analyzed before deciding whether I need more it will be too late!

2/18/09
Yesterday and the day before I used index cards to write out all of my codes through three interviews, and place similar codes in an envelope together. This process really helps me see how the themes might fit together, and for the first time I'm beginning to see some patterns. The data actually look very similar to what I got from my thesis, which is not surprising considering I'm addressing similar concepts with a similar sample of athletes. I went into Atlas and changed my coding and themes in the program. I now have 29 "families," but two "orphan" codes.

I see some major themes coming out already:

Overall Impact of Stress (powerful and wide ranging) - **Negative Consequences** (emotions, physical, well-being) – **Personality** (motivation, attitude, sport mentality) – **Support** (various sources) – **Coping Strategies** (cognitive and behavioral) - **Positive Changes** (various types, some support theory, some new) – **Aftermath** (positive reflections, grateful, emotional rebound)

This is not a linear process. There should probably be arrows coming to and from a lot of these themes.

2/20/09
Made a slight change to my families based on Sones' suggestion. The family "Realization" is too vague. After looking it over, I decided to split it into two separate families – "Changed Priorities," and "Realization of New Possibilities." They seem similar to me, but we'll see if they come back together in the end.

2/25/09
Took some time off from the data the past week. Printed out and read through #4 today. This was a tough one. The athlete had a really hard time articulating herself, and I wasn't able to understand a lot of the recording. I'm also worried that some of my interviewees weren't really "getting it."

2/26/09
Called DeeDee *again!* I'm frustrated that I can't get a hold of her! I have #11 scheduled today and #12 for next week, so I feel good about that. Just finished discussing #4 with Sones on Skype/phone. It went well, although there were quite a few uncertain codes in from this one. We now have 30 families!

I had a *horrible* interview today with #11. She seemed nervous, didn't remember the questionnaire, and didn't feel like she had grown at all! I tried to probe and get something out of her, but what do you do when your interviewee just won't talk? I've conducted over 30 qualitative interviews now, and this was by far the worst. This leads me to wonder how many of the athletes either didn't understand or didn't care about the questionnaire. How valid is my data? Should I have used the MCSDS? I wonder what the procedure is for an interview like this in criterion sampling? She met the criterion based on her questionnaire, but the interview showed that she did not understand.

3/2/09
Justine suggested that I not use #11 for my qual sample. I also deleted her from my quan sample **(#126)** since it is clear that she didn't understand the PTGI.

Beginning analysis of #5. There doesn't seem to be as much info packed into this interview.

Eliminated #192 due to him being the team manager! I tracked down most of my missing birth dates today by finding the players' bio's online. Only one didn't have a birthdate.

Down to 299 DI quant participants after eliminating Wanda and the UVU men's hoops team manager.

3/3/09
Had an incorrect age and sport. Changed the age of # ??? fro 28 to 20. Changed #105 from a football player to a baseball player

Did interview #12 today. This one made up for #11. Her thoughts were very much in line with what others have said.

3/10/09
I need to get in gear if I want to defend before graduation. I still have five more interviews to transcribe and analyze and I have to do my focus group and write chapters 4 and 5.

Went back and listened to Bosquet interview and was able to make out some more of the inaudible points. She still needs to get back to me about the participant check so maybe she will be able to fill more in.

#6 is finished, and it was a tough one. Lots of positive re-appraisal coping going on, and some orphan codes about her background and a previous injury.

3/14/09
I read and highlighted #7 yesterday. Not a lot of good stuff there. This was the first athlete that I'm not sure fully "got it." A few inaudible parts to the interview, but mostly understandable.

I reconceptualized the families yesterday, and they are starting to take shape. I feel as if the higher-order themes will be well saturated, but that the lower-order themes are broader than they would be if I had more data. I would have been able to break the lower-order themes out more with more interviews.

3/16/09
Just transcribed #8. This was one of the better interviews, and by far the best from a guy. Lots of spirituality themes. About to code in Atlas now.

3/17/09
Called Carol to talk about logistic last week and she's been offering me all kinds of suggestions. First, she says that I should run preliminary analyses to decide which variables to enter into the regressions. Second, she thinks I can make a case for splitting the analyses by gender. Third, she suggests running separate simple regressions for each sig. vari, then running a full model where I enter each variable one-by-one in the order of strength. The final model occurs when one of the variables is not significant. I should run this by Dr. Shultz.

3/23/09
I finally made a final decision on the stats. I'm going to report a hierarchical version of the regressions with three blocks of variables – demographics, stressor factors, cognitive appraisals. This way just feels better to me than the other, and I think Dr. Shultz will like it better.

As far as qual, I'm transcribing #10 right now. #9 revealed some different ideas, but mostly fit with the existing categories. Negative feelings and changed perspective needs to be broken out. #9 also seemed a little confused about the concept of SRG. Her, #7, and the interview that I threw out were all quite confused. This will be something to discuss in the discussion!

3/26/09
Just finished transcribing the 11th and final interview! The last two have been informative, although some new things have come up. I will not achieve redundancy for

all categories, but I definitely will for some. I'm also still waiting to hear back from several athletes regarding their participant check, and several more regarding the focus group.

3/30/09
Revised my categories, and developed a model of SRG for my sample. I see **Life Context** as setting the stage for the stressor (e.g., injury, time concerns, performance). The stressor causes **Disruption**, which is characterized by struggles (e.g., negative feelings, negative physical consequences) and attempts to work through the stressor (e.g., coping, pushing). All of the athletes felt **Social and Environmental Support** during these struggles. At some point, the athletes percieved **Adaptive Life Reconfiguration,** in which they felt changed in terms of their life philosophy, their self, interpersonally, and in terms of their life functioning. In the **Aftermath** of the stress, the athletes had positive reflections of their experience, and rebounded from their struggles to a positive emotional state.

4/7/09
I've made some slight changes to the model. "Aftermath" is gone, and instead I have a more general "Psychosocial Outcomes" dimension that encompasses positive reflections, emotional rebound, and personal growth. Julie helped me draw the model, and it is simple, but effectively conveys what I found. I just finished writing the results and need to get on the discussion so that I can send this beast to Justine for a proof read. I wonder if there is too much overlap of some of my categories? Qualitative research is so ambiguous. That's what's great, but at the same time very frustrating.

I had to cancel my focus group due to low availability. Instead I sent everyone the results via e-mail. I know that few of them will respond, but better than none. Only two have not responded to the participant check.

4/12/09
Sent results out to participants via e-mail last week, and have heard back from two participants. The results and discussion sections have been written, and I am working on some of the pre-text today.

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