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The Moderating Effects of Positive and Negative Automatic Thoughts on the Relationship Between Positive Emotions and Resilience

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THE MODERATING EFFECTS OF POSITIVE AND NEGATIVE AUTOMATIC THOUGHTS ON

THE RELATIONSHIP BETWEEN POSITIVE EMOTIONS AND RESILIENCE

by

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(Under the Direction of Jeff Klibert)

ABSTRACT

Resilience is generally characterized as the ability to recover and grow following adversity (Connor & Davidson, 2003) and is considered an integral factor in the promotion of overall physical and psychological health (Masten & Reed, 2002). One factor thought to be associated with resilience is more frequent positive emotions, but the relationship between positive emotions and resilience varies (Tugade, Fredrickson, & Feldman-Barrett, 2004), suggesting moderating factors may be involved. Cognitive factors may be involved in determining the parameters that define when and to what degree this relationship occurs (Troy & Mauss, 2011). The current study was designed to further elucidate the relationship between positive emotions and resilience by examining the moderating effects of cognition, specifically positive and negative thinking styles. A sample 87 college men and 184 college women participated in this cross-sectional, correlational study by completing a series of online measures. Results indicated that positive affect was directly associated with resilience. In addition, different cognitive styles were associated with resilience in the expected directions. Finally, only negative thinking styles moderated the positive affect/resilience relationship. Implications for theory development and clinical interventions are discussed.

Keywords: Positive Affect, Positive and Negative Thinking Styles, Resilience

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3

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4

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

Rationale for Study

Resilience describes the ability to recover and grow following adversity (Connor & Davidson, 2003). A person's capacity for resilience has been shown to vary depending on factors such as personality, gender, age, education, the potency of the stressor, social and economic resources, and the person's meaning-making processes (Bonanno, Westphal, & Mancini, 2011). Resilience has been shown to positively influence aspects of both psychological and physical health. For instance, resilience has been associated with outcomes such as reduced loneliness, hopelessness, life-threatening behaviors (Rew, Taylor-Seehafer, Thomas, & Yockey, 2001), neuroticism, anxiety, and depression (Campell-Sills, Cohan, & Stein, 2006). It has also been associated with more active involvement in issues surrounding health maintenance and promotion (Black & Ford-Gilboe, 2004). Further, greater resilience is related to faster physiological recovery following stress (Tugade, Fredrickson, & Feldman-Barrett, 2004) and evidence suggests it is also related to reduced chronic pain (Schure, Odden, & Goins, 2013).

People from rural areas are more likely to encounter stressors such as unemployment, chronic health conditions and reported poor health, and poverty (Wagenfeld, 2003). The acquisition of mental health services to address these increased stressors in rural areas can be problematic. For instance, individuals from rural areas encounter greater difficulties including increased expense due to travel, stigma, less anonymity, accessibility, and availability (Jameson & Blank, 2007). It is estimated that individuals living in one-third of the counties in the United States have no access to mental health professionals (McCord, Elliott, Brossart, & Castillo, 2012). When services are available they tend to be unsystematically planned and implemented (Fox et al., 1994), and rural individuals tend to rely on pharmaceuticals rather than psychotherapy due to the lack of access to psychologists (Fortney,

Harman, Xu, & Dong, 2010). Given these constraints, it is not surprising that people in rural areas experience higher rates of depression, substance abuse, domestic violence, suicide, and suicide attempts (McCord et al., 2012). Characteristics such as these are generally inversely related to resilience.

Positive psychology and prevention literature identify resilience as an integral factor in the promotion of health (Masten & Reed, 2002). Exposure to difficult stressors is a common experience (Norris, 1992), and accessing resources sufficient to meet the associated demands is frequently problematic (Maulik, Eaton, & Bradshaw, 2011). Mental health providers, influenced by the medical model of treatment, have traditionally looked to "repair damage" in personal adjustment to stressors (Seligman, 2002, p. 3). Focusing on resilience provides one path for mental health providers to refocus their interventions from staunching dysfunctional psychological processes to building on clients' available strengths. One factor associated with greater resilience is positive emotions (Tugade et al., 2004).

It has been argued that "positive emotions represent a basic building block of resilience" (Ong, Bergman, & Chow, 2010, p. 81). Positive emotions have been shown to facilitate better coping and adjustment to stress (Folkman & Moskowitz, 2000). The broaden-and-build theory (Fredrickson, 2001) is a model for understanding the function of positive emotions, such as joy, interest, and contentment. It proposes that, unlike negative emotions which serve to sharply narrow a person's focus, positive emotions encourage exploration, openness, and behaviors that increase a person's repertoire for adapting to new situations. For instance, when a person is experiencing joy he/she is more likely to play and interact with others. Similarly, an emotion such as interest spurs engagement and investigation of the environment. Through processes such as these an individual broadens his/her perspectives, makes new discoveries, taps into his/her creativity, conceives new ideas, and forms new

relationships. Essentially, positive emotions broaden an individual's perspective to such an extent that intrapersonal resources associated with the development of resilience are activated and maintained.

While research has demonstrated a significant relationship between positive emotions and resilience, the relationship between these two factors is complex (Tugade, Fredrickson, & Feldman-Barrett, 2004), suggesting that intervening factors may be important to help conceptualize when this relationship is strengthened or diminished. One such factor, which has demonstrated a relationship with emotion and resilience, may be thinking styles (Troy & Mauss, 2011). The cognitive model proposes important psychological outcomes are often the result of specific cognitive/information processing systems. Cognitions are thought to exist at three levels: core beliefs, intermediate beliefs, and automatic thoughts (Clark & Beck, 2011). Core beliefs are the most fundamental level of belief and tend to be rigid, overgeneralized, and global. Intermediate beliefs are attitudes, assumptions, and rules that stem from core beliefs. Automatic thoughts are the most superficial level of cognition and consist of the internal dialogue or images that go through a person's mind in response to a given situation. A person's negative automatic thoughts about the self and the world, which are supported by their intermediate and core beliefs, set up a self-reinforcing cycle that predisposes an individual to emotional dysregulation which then contributes to sustaining the person's negative intermediate and core beliefs (Clark & Beck, 2011). Conversely, positive automatic thinking has been shown to be inversely related to negative emotion (e.g., Ingram & Wisnicki, 1988). Evidence based on measures of depression suggests that the regulation of negative emotion using cognitive strategies, such as selective attention and cognitive reframing, contributes to a person's ability to recover from stressful events (Troy & Mauss, 2011). However, the relationship between the cognitive regulation of positive emotions and resilience remains unclear. Further elucidation of this relationship would provide

13

additional information regarding the ways in which positive or negative thinking styles influence the relationship between positive emotion and resilience.

Purpose

The current study investigated three areas of interest. First, this study sought to determine if self-reports of resilience vary between individuals living in a rural versus a non-rural area. Second, this study sought to demonstrate whether a direct relationship exists between reports of positive emotions and resilience. Finally, given the theoretically complex nature of the relationship between positive emotions and resilience, the current study aimed to investigate the moderating effects of positive and negative automatic thoughts on this relationship.

Significance

Demonstrating a relationship between positive emotions and resilience will lend further support to the previously established relationship between affective states and positive outcomes. Specifically, it will generate more evidence and demand for the identification of intervening moderating and mediating variables to better understand the nature of the connection between positive emotions and resilience. Further, if automatic thoughts are found to moderate this relationship, this will inevitably require researchers to examine this relationship from a cognitive perspective and compel future research to consider unique cognitive processes in unraveling the link between positive emotions and other positive psychological outcomes. This will be one of the first studies to offer specific evidence on how cognitive processes interact with positive emotions to predict variance in resilience. Significant results will facilitate a more integrative conceptualization on how best to deconstruct and evaluate resilience development.

Greater resilience promotes better overall functioning. The advancement of resilience, then, is a key clinical objective. The most effective way to promote resilience remains an area of exploration,

and experiencing more positive emotions has been demonstrated as one way to increase resilience. If automatic thoughts are found to moderate the relationship between experiencing positive emotions and resilience levels, this will extend our understanding of how best to promote resilience. Future clinical interventions can be modified to better accommodate the influence of cognitive factors.

Definition of Terms

Positive Affect. Within the literature, the terms associated with emotional states, e.g. "affect", "mood", and "emotion", are not universally understood to describe clearly delineated phenomena. However, a consensus appears to be emerging wherein "affect" is the broad and general construct that subsumes both "moods" (long-lasting states) and "emotions" (brief states in response to a specific stimulus; Gross, 2010). However, there is still a conceptually large overlap shared between the constructs of affect and emotion. Therefore, "affect" and "emotion" will be used interchangeably. Positive affect and negative affect are two broad, general dimensions of emotional experience that have consistently emerged within research (e.g., Almagor & Ben-Porath, 1989; Zevon & Tellegen, 1982). A hierarchical structure was proposed by Watson and Tellegen (1985) wherein positive affect and negative affect, reflecting a mood valence, subsume multiple, individually distinguishable, affective states which reflect mood content. Positive affect is described by Watson, Clark, and Tellegen (1988) as reflecting the degree to which a person feels enthusiastic, active, and alert. They further describe high positive affect as a state of high energy, full concentration and as experiencing pleasurable engagement. They described low positive affect as feelings of sadness and lethargy. In the current study, positive affect acted as the predictor variable.

Resilience. Resilience, as described by Connor and Davidson (2003), consists of the personal qualities that allow an individual to thrive despite having faced adversity. It is a multidimensional construct that varies depending on both internal and external contextual factors. Richardson (2002)

developed a model of resiliency based on homeostasis. His model suggests that a person strives to maintain a state of homeostasis with regard to "state of mind, body, and spirit" and that this homeostasis is "routinely bombarded with internal and external life prompts, stressors, adversity, opportunities, and other forms of change" (p. 311). Over time, these events build resilient qualities in the individual. A disruption to homeostasis by new or overwhelming stressors represents an opportunity for introspection and growth. If, as a result of this experience, improved adaptive strategies are acquired one is considered to have achieved resilient integration. Resilience, then, can be considered a person's ability to both recover and grow following a stressful event. In the current study, resilience acted as the outcome variable.

Automatic Thoughts. The cognitive model asserts that thought processes underlie all psychological function and they affect both behavior and emotional states. Dysfunctional or distorted thinking leads to maladaptive functioning, and, conversely, realistic and rational thinking leads to adaptive functioning (Clark & Beck, 2011). A person's negative automatic thoughts about the self and the world, which are supported by their intermediate and core beliefs, set up a self-reinforcing cycle that predisposes an individual to emotional dysregulation and maladaptive behavior (Clark & Beck, 2011). It is also proposed, however, that positive automatic thoughts play a role in overall psychological functioning. For instance, Ingram and Wisnicki (1988) identify four cognitive dimensions associated with good moods and positive experiences: positive daily functioning, positive self-evaluation, others' evaluations of the self, and positive future expectations. They note that these factors "appear to reflect the opposite of Beck's (1967) cognitive triad" (p. 900). In the current study, positive and negative automatic thoughts functioned as the moderators.

CHAPTER 2: LITERATURE REVIEW

Positive Emotion

The Broaden-and-Build Model of Positive Emotion. Emotions have been generally

characterized as states that have evolved as an adaptive response for addressing fundamental life tasks

(Tooby & Cosmides, 1990; Frijda, Kuipers, & ter Schure, 1989). Different emotions mobilize

multiple internal psychological and physiological systems to accomplish important fundamental life

tasks, such as survival and procreation (Ekman, 1999). For example, the emotion of fear is effective

for enhancing threat detection and inducing a flight response to dangerous situations (Ekman, 1999).

Fredrickson (1998) proposed that most models of emotion based on action tendencies consider only

how negative emotions account for unique behavioral outcomes; less is known regarding the presence

and purpose of positive emotions.

Fredrickson's research began with the hypothesis that positive emotions function to "undo"

the effects of negative emotions. Fredrickson and Levinson (1998) lent support to this position by

demonstrating that induced happiness or contentment after the presentation of a fear-eliciting

stimulus helps reduce physiological arousal. However, while investigating this hypothesis,

Fredrickson noted it was unlikely that positive emotions served simply to undo negative emotions

because positive emotions are not always contingent on a preexisting negative emotion. Further,

Fredrickson asserted positive emotions could not be easily conceptualized through frameworks

designed to understand the utility and purpose behind negative emotions because positive emotions,

e.g., contentment, do not always provoke the action tendencies engendered by negative emotions

(Fredrickson, 2013). If positive emotions occur outside of the experience of negative emotions, and if

positive emotions cannot be easily understood through established theory, the question became "what

is the purpose behind experiencing positive emotions?"

The *broaden-and-build* model (Fredrickson, 1998) was created to elucidate the form and function of positive emotions. Fredrickson elaborated on the basic model of emotion and delineated between negative emotions, which arise in response to negative situations and serve to sharply narrow focus, and positive emotions which arise in opportune situations and open one to broader experiences. Fredrickson argued that natural selection has shaped the experience of positive emotions to prompt the acquisition of resources, which in turn increases the probability of survival and reproduction. The way an individual builds these resources is by broadening his/her awareness to a greater diversity of possible thoughts, actions, and experiences. Unlike negative emotions, which prompt a narrowing focus and immediate reaction, positive emotions elicit an openness to new experiences. This openness can lead to new discoveries, improved interpersonal alliances, and new abilities. These new assets, in turn, provide advantages for continued survival.

Fredrickson (2013) provided lines of empirical support for the existence of both the broadening and building aspects of positive emotion. The broaden hypothesis asserts that positive emotion increases the variability of thoughts, actions, and perceptions a person experiences. Some of the mental effects associated with positive emotions include elevation in psychological flexibility, creativity, integrative abilities, openness to information, and efficiency. Behavioral changes, such as a preference for variability, task switching, social inclusion, and openness to more options, have also been demonstrated through the experience of positive emotions (Fredrickson, 2013). Further, increased breadth of awareness, attention, action tendencies (Fredrickson & Branigan, 2005), and cognition (Johnson, Waugh, & Fredrickson, 2010) have been shown to increase following the elicitation of positive emotion.

The function of increased openness to experience is to build resource acquisition and personal growth (also known as the build hypothesis; Fredrickson, 2001). In support of the build hypothesis,

18

Lyubomirsky, King, and Diener (2005) found that higher levels of positive emotions preceded better overall functioning, including subjectively better marriages and relationships, higher incomes, better work performance, more community involvement, better health outcomes, and longer life. Further, positive emotions were associated with desirable personal outcomes "such as sociability, optimism, energy, originality, and altruism" (p. 846). Moreover, Cohn, Fredrickson, Brown, Mikels, and Conway (2009) demonstrated that daily positive emotions are associated with trait resilience and life satisfaction. Additionally, Cohn and colleagues found that changes in resilience mediated the relationship between positive emotion and satisfaction, suggesting that it was not simply feeling good that increased their life satisfaction, but that developing the tools to cope and then grow played an important role in developing a higher quality of life.

Based on prevailing theory and supportive empirical evidence, Fredrickson proposed that, as positive emotions lead to an increase in personal resources, those resources also facilitate more positive emotions. Fredrickson described this feedback loop as an "upward spiral" that generates increases in resources and functionality (Fredrickson, 2013). In support of this upward spiral, positive emotions were shown to reciprocally build with positive coping, interpersonal trust (Burns et al., 2008) and parasympathetic effectiveness (Kok & Fredrickson, 2010), all of which are known positive outcomes that serve to increase an individual's quality of life.

Positive Emotions and Resilience

Numerous studies demonstrate individuals who experience more positive emotions are characterized as more resilient. Fredrickson, Tugade, Waugh, and Larkin (2003) conducted a study in the context of the September 11, 2001 attacks in the United States. They found that positive emotions completely mediated the relationship between trait resilience and coping resources. Tugade and Fredrickson (2004) demonstrated that people who score higher on a self-report measure of resilience

19

are better able to regulate their emotion and recover from negative emotions faster. Ong, Bergeman, Bisconti, and Wallace (2006) found that, in adapting to daily stressors, positive emotions were a key difference between widows who exhibited greater or less resilience. More specifically, Ong and colleagues found that during stressful periods all participants experienced negative emotions, but highly resilient widows experienced positive emotions independent of, and simultaneously with, negative emotions. Further, Ong, Bergeman, and Chow (2010) hypothesized that daily positive emotions are key mediational mechanisms in the adjustment to stressors characteristic of the resilient personality. Cohn et al. (2009) found that increases in trait resilience over time are predicted by experiencing positive emotions on a day-to-day basis. Moreover, Tugade, Fredrickson, and Feldman-Barrett (2004) found a positive correlation between trait resilience and positive emotion using the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). Overall, given these findings, it is expected that positive emotions will have a positive relationship with resilience.

Moderated Models

The relationship between positive emotions and resilience is clear; however, the nature of that relationship can be further explored. To do so, it becomes important to identify variables that may moderate the strength or direction of this relationship. Identifying the moderating variables that clarify the degree to which positive emotions are related to resilience is critically important to inform future research and clinical practice. In terms of research, more clearly delineated moderating variables can guide research design, the identification of appropriate populations and conditions, and help clarify effect sizes of important relationships (Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001). In terms of clinical application, an incomplete understanding of the relationship between positive emotion and resilience could lead to ineffective, or even harmful, interventions (Kraemer et al., 2001). Specifically, if clinicians fail to consider variables that augment the conditions by which

20

positive emotions lead to resilience, they may select treatment plans that have limited effectiveness. Therefore, it is important that researchers continue to extend the parameters by which positive emotions are related to the development of resilience. One potential mechanism by which researchers can extend a delineated understanding of this relationship is through thinking styles.

Cognitive Model

The cognitive model, developed by Beck (1964), proposes well-being stems from thought processes. Automatic thoughts are the most superficial level of these thought processes. They are the quick, mostly unconsidered, ideas, dialogues, or image that guide a person's thinking in response to any given situation. These automatic thoughts broadly affect the experience of individuals not only with regard to dysfunction (Clark & Beck, 2011), but also to adaptive functioning (Ingram & Wisnicki, 1988).

A majority of the research on automatic thoughts reveals that positive automatic thoughts and negative automatic thoughts are inversely related (e.g., Jolly & Wiesner, 1996). However, these constructs appear only moderately related (Burgess & Haaga, 1994), which has led to some discussion of whether or not positive and negative automatic thoughts are two end points of the same continuum (Bryant & Baxter, 1997). Models of cognition further delineate the unique features of positive and negative dimensions of thinking. Specifically, research indicates that positive and negative cognitions do not always co-occur in linear or regulated patterns within the same individual. In fact, studies indicate the independent presence of positive-oriented thoughts versus negative-oriented thoughts is predictive of adaptive behavior (for a review, see Ingram & Wisnicki, 1988) suggesting these two types of dimensions may be measuring for unique components not accounted for by the other. Considering such trends, Kendall (1992) noted that it was important that researchers

21

examine both positive and negative dimensions of cognitions as a means to develop a more robust understanding of associated psychological outcomes.

Given the efficacy of cognitive-behavioral therapy in eliciting positive gains toward well-being, extensive research has been conducted on the influence of positive and negative automatic thinking (e.g.,, Wright, 2003). However, research has yet to determine if and how cognitive dimensions interact with positive affect to predict fluctuations in resilience. Despite this gap in the literature, there are numerous lines of evidence that suggest automatic thinking styles may moderate the relationship between positive affect and resilience.

Automatic Thoughts and Positive Emotions

Zajonc (1980) asserted that emotions frequently precede, and exist fairly independent of, associated cognition, but others have argued that cognition precedes emotion and/or the two are complexly intertwined (Lazarus, 1999). Notwithstanding the unclear direction of the relationship, emotion has been shown to affect basic cognitive processes, such as enhancing perception, facilitating attention on emotionally-laden stimuli, inhibiting attention on non-emotional stimuli, and influencing memory (Phelps, 2006), as well as higher order cognitive processes such as interpretation, judgment, decision making, and reasoning (Blanchette & Richards, 2010). For example, anxiety has been shown to lead to interpretations of events as more threatening (Butler & Matthews, 1983, 1987). Similarly, people who experience social anxiety reported increased negative evaluations in response to ambiguous social situations and catastrophization in response to mildly negative social evaluations when compared to controls (Stopa & Clark, 2000). Further, Mayer and Hanson (1995) demonstrated that people's judgment changes in accordance with their mood, that is, a positive mood will enhance the perception of a positive concept. Given these findings, it appears that emotions, at some level, are important in activating thought processes.

Overall, evidence indicates a relationship between cognition and positive emotion wherein positive automatic thoughts have a positive relationship with positive emotion (Fredrickson et al. 2008) and negative automatic thoughts have a negative relationship with positive emotion (Ellis & Dryden, 1997). In support of negative automatic thoughts' inverse relationship with positive emotions, Roberts and Kassel (1996) found that negative cognitions, as measured by the Automatic Thought Questionnaire (ATQ-N), were negatively correlated with positive emotion. Further, Koseki et al. (2013) stated that negative automatic thoughts were shown to activate areas of the brain associated with the inhibition of positive emotion. Moreover, Wong (2010) found that negative automatic thoughts were inversely correlated with life satisfaction and happiness and concluded that a higher ratio of positive automatic thoughts to the sum of positive and negative automatic thoughts led to better mental health outcomes.

Research indicates that positive automatic thoughts appear to be positively related to positive emotions. For instance, Burgess and Haaga (1994) found that positive automatic thoughts, as assessed by the Automatic Thought Questionnaire – Positive (ATQ-P), are associated with positive emotions when measured by the PANAS (Watson, Clark, & Tellegen, 1988). Lightsey and Boyraz (2011) demonstrated a positive correlation between positive automatic thoughts and positive affect, meaning in life, and life satisfaction. Further, positive automatic thoughts have also been shown to predict greater levels of specific positive emotions, like happiness (Lightsey, 1994). Moreover, ATQ-P scores have been shown to have a significant positive relationship with life satisfaction (Ingram, Kendall, Siegle, Guarino, & McLaughlin, 1995).

Automatic Thoughts and Resilience

Cognitive processes also appear important in the development of resilience. Research has suggested that a wide range of cognitive factors play a significant role in the cultivation and

inhibition of resilience. For instance, information processing (Harris, Hancock, & Harris, 2005), meaning making (Tugade & Fredrickson, 2007), appraisal (Bailey, Sharma, & Jubin, 2013), and cognitive development (Brown, Barbarin, & Scott, 2013) are just a few cognitive process known to contribute to the development of resilience. Neenan (2009) noted that flexibility in thinking patterns was a hallmark determinant of whether an individual could develop healthy levels of resilience. Specifically, Neenan (2009) asserted that resilience development is dependent upon flexible cognitive processes that increase adaptability, acceptance, balanced self-control, and effective problem-solving; conversely, rigid thinking styles impede the process of identifying, accumulating, and proactively implementing necessary resources to overcome stress, challenge, and conflict.

Flexibility and rigidity are also discriminate features between positive and negative automatic thinking. Cognitive theories equate negative automatic thoughts with pronounced rigidity (e.g., all-or-nothing thinking) and suggest this rigidity promotes and maintains continued negative thinking and mood disturbances such as depression (Young, Weinberger, & Beck, 2001). Recent research has also indicated that cognitive flexibility is inversely related to depressive cognitions associated with negative life events (Fresco, Rytwinski, & Craighead, 2007) and distress related to automatic thought restructuring during the course of cognitive-behavioral therapy, and positively related to improved therapist-rated cognitive restructuring ability (Johnco, Wuthrich, & Rapee, 2014).

Numerous studies offer empirical support for the link between positive and negative automatic thinking and resilience. Positive automatic thoughts are associated with increased resilience and negative automatic thoughts are related to decreased resilience. Boyraz and Lightsey (2012) found evidence that positive automatic thoughts are positively related to resilience. Their research indicated that the relationship between stressful life events and the eventual meaning attributed to those events by the individual was moderated by positive automatic thoughts. In other

24

words, stressful events led to increased meaning in life for people with more positive automatic thoughts. Further, in a review of studies examining post-traumatic growth, Barskova and Oesterreich (2009) reported that cognitive factors such as optimism and higher perceived self-efficacy were associated with more growth-related changes and adaptation. Moreover, cognitive coping strategies, particularly positive refocusing (i.e., thinking about positives rather than the traumatic event), positive reappraisal (i.e., associating positive meaning with the event), and putting into perspective (i.e., considering the event in relative terms; Garnefski, Kraaij, & Spinhoven, 2001), explained the largest amount of variance in posttraumatic growth in individuals who had experienced a myocardial infarction (Garnefski, Kraaij, Schroevers, & Somsen, 2008).

Conversely, negative automatic thoughts are related to decreased resilience. For instance, higher scores on the Dysfunctional Attitude Scale (Weissman & Beck, 1978) have been shown to be inversely related to qualities of resilience such as life satisfaction, positive affect, self-esteem, a sense of meaning, and vitality (Huta & Hawley, 2010). Further, Hogendoorn et al. (2010) demonstrated negative automatic thoughts were negatively related to resilience-related constructs such as psychological adjustment (defined by emotional symptoms, conduct problems, hyperactivity-attention problems, peer problems, and prosocial behavior) as reported by the parents of children and adolescents. Moreover, measures of resilience have been negatively correlated with negative cognitive constructs such as pessimism, self-blame, and denial (Smith et al., 2008). Further evidence is provided by the inverse relationship between resilience and both depression and anxiety (Bonanno, 2004; Connor & Davidson, 2003), as these mood states are consistently correlated with negative thinking styles, such as self-blame, rumination, blaming others, and catastrophizing (e.g., Garnefski, Kraaij, & Spinhoven, 2001).

Examining the role of cognition in the relationship between positive emotion and resilience has not been widely explored in the literature, but these constructs appear to be inter-related. The broaden-and-build model predicts that positive emotions enhance personal flexibility and open one up to a broader range of cognitive thinking (Fredrickson et al., 2008). This should create a dynamic wherein the experience of positive emotion facilitates broader, more creative, open, and more positive automatic thoughts which should, in turn, influence the parameters by which positive emotions are related to resilience. However, the experience of positive emotions may be delimited by the presence of negative automatic thoughts, which, in turn, may alter the dynamics by which positive emotions relate to resilience. Therefore, positive emotions may be related to resilience only when they elicit, or are facilitated by, positive cognitions and occur in the absence of, or suppress, negative cognitions.

Current Study

Rural Differences. Research on resilience with respect to rural populations is sparse. Wells (2008) found that the mean level of resilience in an older-adult rural population was high, which they hypothesized could be related to high levels of self-reliance, but their resilience did not significantly differ from urban or suburban populations (Wells, 2012). In a qualitative study, Notter, MacTavish, and Shamah (2008) found that resilient outcomes, which they described as an unexpectedly positive life course trajectory characterized by "the absence of antisocial and internalizing behaviors characteristic of the pattern in [the] family of origin" (p. 614), are achievable and facilitated by acquiring positive support and distancing from nonsupport. Wainer and Chesters (2000) found that determinants of resilience included social connectedness, valuing diversity, and economic participation in a sample of rural Australians. Studies examining rural differences in resilience within the United States could not be located. It is important to obtain information indicating whether individuals from rural areas report lower or higher levels of resilience as compared to those from

26

urban areas in order to inform more targeted interventions. As a result, an exploratory component of this study will be to examine mean differences between reports of resilience from individuals from rural versus urban backgrounds.

Hypotheses. Considering the existent literature, the hypotheses for the current study include: (a) higher levels of positive emotion will be positively related to levels of resilience; (b) positive automatic thoughts will be positively related to estimates of positive affect and resilience; (c) negative automatic thoughts will be inversely related to estimates of positive affect and resilience; (d) positive and negative automatic thoughts will moderate the relationship between positive affect and resilience.

CHAPTER 3: METHODOLOGY

Participants

The data consisted of a sample of undergraduate college students attending a large university in the southeast region of the United States. Fifty student survey responses were removed from the final sample tally because of validity concerns. During the survey, participants were asked to respond Strongly Disagree to one prompt. Participants who responded incorrectly to the validity prompt were judged to be distracted, inattentive, or hasty in their overall approach to the survey and therefore were removed. In addition, participants responding to less than 90% of the total number of survey items were also removed. The final sample consisted of 272 undergraduate students. The ages of the sample ranged from 18 to 48 with an average age of 20.24. The sample consisted of 87 men (32%) and 184 women (67.6%). One participant did not provide a response to the gender prompt. Additionally, 120 participants identified themselves as being from a rural area (44.1%), and 150 identified as being from a non-rural area (55.1%). Two participants did not provide a response to the rurality prompt. With regard to the racial composition of the sample, 63 participants self-identified as African-American/Black (23.2%), 183 as European-American/White (67.3%), 2 as Mexican-American (0.7%), 2 as Asian-American (0.7%), and 22 as Other (8.1%). Participants received class credit for participating.

Procedure

The study involved the online completion of four measures: the Positive and Negative Affect Schedule – Expanded Form (PANAS-X; Watson & Clark, 1999); the Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003); the Automatic Thoughts Questionnaire (ATQ-N; Hollon & Kendall, 1980); and the Automatic Thoughts Questionnaire – Positive (ATQ-P; Ingram & Wisnicki, 1988). Participants were recruited via an interactive website known as SONA which listed

ongoing research projects within the university and managed research participation. Students used

SONA to view all available study descriptions and chose studies in which they wanted to participate.

Students who chose to complete this study were redirected to the data-collecting website

Surveymonkey.com. Participants were then presented with an informed consent page. Students who

chose not to participate were presented the option to click a button labeled "I do not choose to

participate" and were subsequently directed away from the Surveymonkey.com website. Students

who chose to provide their consent, using a button labeled "I give my consent to participate", were

directed to a demographics survey (e.g., gender, age, etc.). Participants were then presented with the

four measures. Once the measures were completed students were given information regarding both

the purpose of the study and their academic extra credit.

Data Storage

Data initially resided on the Surveymonkey servers. Upon completion of the data collection,

all information was transferred to the researcher's computer for analysis with SPSS and deleted from

Surveymonkey. The data will be stored on a secure, password-protected hard drive located within the

Georgia Southern University psychology department for five years.

Measures

Demographic Form. Demographic data associated with age, sex, ethnicity, marital status,

sexual orientation, college classification, and community setting was collected from all participants.

Of particular interest, estimates of rurality were assessed by asking participants to respond to a series

of questions concerning their developmental history and current living status. Participants self-

reported either growing up/currently living in a rural versus urban community setting. Overall, for the

purposes of this study rurality is defined as a grouping variable that were based on responses to the

rural versus non-rural prompt. Individuals who responded as growing up in a rural area were placed

into rural group, whereas individuals who responded as growing up in a non-rural area were placed into a non-rural group.

Positive and Negative Affect Schedule – Expanded Form (PANAS-X; Watson & Clark, 1999). The PANAS-X is a self-report measure consisting of 60 items that measures long-term differences in affect. Two global factors consisting of positive affect (10 items) and negative affect (10 items) are assessed. Respondents were asked to rate the extent to which words and phrases describing different feelings and emotions accurately reflected how they felt during the "past few weeks" from 1 ("very little or not at all") to 5 ("extremely"). The total possible range for each factor is from 10 to 50. A mean score ranging from 1 to 5 was generated for each factor with higher scores indicating a stronger recent affiliation with that affective state. Using Cronbach's coefficient alpha the PANAS-X has demonstrated internal consistency reliability ranging from .83 to .90 for the positive affect scale and from .85 to .90 for the negative affect scale. The PANAS-X has shown high convergent validity with the Profile of Mood States questionnaire with correlations ranging from .85 to .91 on measures of similar affective states (Watson & Clark, 1999). In the current study, the PANAS-X demonstrated good reliabilities, yielding Cronbach's coefficient alphas of .87 for the positive affect scale and .89 for the negative affect scale.

Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003). The CD-RISC consists of 25 self-rated items that measure characteristics associated with resiliency. It was developed to quantify resilience based on the conceptualization of resiliency as characteristics typical of individuals who successfully respond to stressors. Each of the 25 items is measured on a 5-point Likert scale ranging from 1 ("not at all true") to 5 ("true nearly all the time"). The full range of scores is from 25–125, with higher scores representing greater resilience. CD-RISC's has shown internally consistent reliability (Cronbach's α = .89) and a high level of reliability over time with a

30

test-retest correlation coefficient of 0.87 (Connor & Davidson, 2003). The CD-RISC demonstrated convergent validity with the Kobasa hardiness measure (Kobasa, 1979) and the Sheehan Social Support Scale (Sheehan, et al., 1990), and a negative correlation with The Sheehan Stress Vulnerability Scale (Sheehan, 1983) and a scale of disability associated with psychiatric symptoms, the Sheehan Disability Scale (Sheehan, et al., 1990). In the current study, the CD-RISC demonstrated good reliability and yielded a Cronbach's coefficient alpha of .92.

Automatic Thoughts Questionnaire (ATQ-N; Hollon & Kendall, 1980). The ATQ-N is a measure of negative self-statements consisting of 30 self-report items. Respondents were asked to report the frequency with which the included negative self-statements had occurred to them over the course of the previous week. Each of the 30 items is measured on a 5-point Likert scale ranging from 1 ("never") to 5 ("all the time"). The full range of scores is from 30 – 150, with higher scores representing greater frequency of the negative thoughts. Reliability has been established by a significant split-half reliability of .97 and a coefficient alpha of .96 (Hollon & Kendall, 1980). The validity for the ATQ-N was supported when it was shown that depressed participants had significantly higher scores than non-depressed participants, and that it was strongly correlated with the Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1979), the Minnesota Multiphasic Personality Inventory Depression scale (Hathaway & McKinley, 1940), and the State-Trait Anxiety Inventory A-Trait scale (Spielberger, Gorsuch, & Lushene, 1970). In the current study, the ATQ-N demonstrated good reliability and yielded a Cronbach's coefficient alpha of .97.

Automatic Thoughts Questionnaire - Positive (ATQ-P; Ingram & Wisnicki, 1988). The ATQ-P is a measure of positive self-statements consisting of 30 self-report items. Respondents were asked to report the frequency with which each of the positive self-statements had occurred to them over the course of the previous week. Each of the 30 items is measured on a 5-point Likert scale ranging from

1 ("never") to 5 ("all the time"). The full range of scores is from 30 – 150, with higher scores representing greater frequency of the positive thoughts. The ATQ-P has shown good internal consistency with all items significantly correlating with each other ($p < .001$) with correlations ranging from .42 to .75 (Ingram & Wisnicki, 1988). Divergent validity was suggested by a modest correlation with the ATQ-N (Hollon & Kendall, 1980) and significantly negative correlations with the Beck Depression Inventory (Beck, 1967), the Trait form of the State-Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970), and the Social Avoidance and Distress Scale (Watson & Friend, 1969). In the current study, the ATQ-P demonstrated good reliability and yielded a Cronbach's coefficient alpha of .95.

CHAPTER 4: RESULTS

Preliminary Analysis. A one-way MANOVA was used to examine rural differences on positive affect, positive thoughts, negative thoughts, and resilience. A non-significant multivariate effect was evident, Wilks $\lambda = .986$, $F(5, 260) = 0.74$, $p > .05$, $\eta^2 = .014$. Follow-up ANOVA's for each of the dependent variables also revealed no significant differences. These results suggest that individuals from rural areas report similar levels of positive affect, positive thoughts, negative thoughts, and resilience compared to individuals from non-rural areas. Means, standard deviations, and Min-Max ranges are located on Table 1.

Bivariate Correlations. Correlation coefficients are presented in Table 2. All relationships were found to be significant in the expected directions. As expected, positive affect was positively linked to reports of resilience. Positive affect had a strong, positive correlation with positive thoughts, and a weaker, inverse correlation with negative thoughts. Resilience demonstrated a strong, positive relationship with positive thoughts and a moderate, inverse correlation with negative thoughts. Positive thoughts and negative thoughts were inversely linked to a moderate degree. These results suggest that individuals who report higher levels of positive affect and positive thinking are more likely to report higher levels of resilience. Alternatively, individuals who endorse greater levels of negative thinking are more likely to report lower levels of resilience.

Moderation Models. To examine the moderating effects of positive and negative thoughts on the relationship between positive affect and resilience, two hierarchical regressions were analyzed. Consistent with Jose (2012), hierarchical regressions were to increase the power of the interpretations. For both models, the variables were centered. Positive affect (the predictor variable) was entered in block one of the regression equation. Next, positive or negative thoughts (the moderating variables) were entered in block two. Finally, the interaction term (positive

affect*automatic thoughts) was entered in block three of both models. The first model was designed to examine the moderating effect of positive thoughts, whereas the second model was designed to examine the moderating effects of negative thoughts (see Figures 1 & 2, respectively, for the interaction graphs). Significant moderating effects are demonstrated when the interaction term accounts for unique variance over and above the contributions of the predictor and moderating variable on the outcome variable (Jose, 2012).

In the first hierarchical regression, positive affect explained 25.7% of the variance in resilience scores, $F(1, 266) = 91.90$, $p < .001$. The inclusion of positive thoughts in the second block of the model explained an additional 23.2% of variance in resilience scores, $F_{change}(1, 265) = 119.96$, $p < .001$. Finally, the interaction term explained no additional variance in resilience, $R^2_{total} = .49$, $F_{change} (1, 264) = 0.05$, $p = .82$. Positive automatic thoughts (B = .37) was retained as a significant individual predictor in the final model, whereas the interaction term (B = .01) was not a significant predictor (see Table 3). Overall, because the interaction term did not account for significant variance in the final step of the model, positive thoughts do not appear to moderate the relationship between positive affect and resilience.

In the second model, positive affect explained 25.7% of the variance in resilience, $F(1, 266) = 91.90$, $p < .001$. The inclusion of negative thoughts explained an additional 4.4% of variance in resilience, $F_{change} (1, 265) = 16.48$, $p < .001$. In the final step of the model, the interaction term explained an additional 1.3% of the variance in resilience, $R^2_{total} = .313$, $F_{change} (1, 264) = 4.87$, $p < .05$. Negative automatic thoughts (B = -0.42) and the interaction term (B = 0.01) were retained as significant individual predictors in the final model, whereas positive affect (B = 0.36) was not (see Table 3). Because the interaction term was a significant individual predictor in the final model, these results suggest that negative thoughts moderate the relationship between positive affect and

resilience. Specifically, the strength of the relationship between positive affect and resilience

decreased with higher levels of negative thoughts.

CHAPTER 5: DISCUSSION

Review of Purpose

The purpose of this study was to examine models that could foster new insights in the development and maintenance of resilience. Models in the current study investigated the inter-correlations among positive affect, negative thinking styles, positive thinking styles, and resilience. Several questions were investigated, including: whether reports of positive affect, positive and negative thinking styles, and resilience varied between rural and non-rural participants; whether positive affect and resilience were positively related; and whether the relationship between positive affect and resilience was moderated by positive and/or negative thinking styles.

Rural Differences

To explicate potential differences between rural and non-rural populations, this study investigated how respondents (rural versus non-rural) differed with respect to positive affect, positive thoughts, negative thoughts, and resilience. A MANOVA analysis revealed non-significant differences, thereby suggesting that positive emotional characteristics and cognitive styles do not appear to fluctuate by self-identified rural status. Although research into the unique differences of rural populations on these constructs is scarce, the current results appear to be consistent with some research. For example, Wells (2012) found no significant difference in the resilience levels of urban, suburban, and rural older adults.

Nevertheless, these results are interesting considering the research that suggests psychopathological conditions appear more prevalent in rural areas (McCord et al., 2012). Considering that fluctuations in affect (Lyubomirsky, et al., 2005) and cognition (Ingram & Wisnicki, 1988) significantly impact the experience and expression of different mental health outcomes, it is a little surprising that individuals from rural versus non-rural areas did not vary on reports of positive

affect, thinking styles, or resilience. It is possible that the current study, due to its use of a college

student sample, did not accurately represent the rural versus non-rural population differences. For

example, compared to their rural environment, a self-identified rural participant within a university

setting might have better access to mental health services, a rich learning environment, new and

diverse experiences, and more opportunities for concordant social support. Additionally, it is possible

this is a self-selecting sample in that there may be differences between rural residents who make it

into college versus those who do not. In light of these insights, future research might benefit from

obtaining more representative rural samples when examining rural differences in reports of affect,

cognitive styles, and resilience.

Bivariate Relationships

Positive Affect and Resilience. The relationship between positive affect and resilience was

analyzed using a bivariate correlation. Consistent with the literature (Tugade, et al., 2004), these

factors were significantly and positively correlated. This result indicates individuals who report

higher levels of positive emotion tend to possess higher levels of resilience. However, given the

correlational nature of this study, the directionality of this relationship cannot be established.

Answering the question of whether positive emotions promote resilience or greater resilience results

in more positive emotions is an important consideration to inform clinical applications. For instance,

future research might induce positive and/or negative emotional states before the introduction of a

stressor and then measure participants' recovery and growth to determine if and how positive

emotions contribute to resilience.

Positive and Negative Thoughts. A bivariate correlation was run to analyze the relationship

between positive and negative thoughts. These two variables were significantly and inversely

correlated, which is consistent with previous research (Ingram et al., 1995). However, the strength of

this correlation was moderate, suggesting that these two constructs should not be placed on opposite ends of the same continuum. These results are consistent with previous research that argues these constructs are best served when they are considered as independent, unique domains of thinking style (Bryant & Baxter, 1997). In the future, research should continue to investigate positive and negative thoughts separately rather than assume an absence of negative thoughts is synonymous with an increase in positive thoughts and vice versa.

Thinking Styles and Resilience. The relationships between thinking styles and resilience were also analyzed. Positive thinking styles were positively related to resilience. This outcome is consistent with expectations and previous research (Boyraz & Lightsey, 2012). Also, consistent with the literature (Smith et al., 2008), negative thinking styles and resilience were significantly and negatively correlated. This suggests that higher levels of negative thinking styles are associated with decreased resilience levels. These correlational effects, however, do not consider contextual factors. For instance, McNulty and Fincham (2012) argue that cognitive factors that are generally deemed "positive" (e.g., optimism, benevolent attributions, etc.) may not increase elements of well-being (e.g., resilience) under all circumstances. For example, a person thinking positively about a genuinely detrimental environment may prolong its harmful effects. Future research needs to extend and clarify the relationship between cognitive styles and resilience by examining ways in which different contextual factors moderate the relationship between thinking style and resilience development.

Moderation Models

Positive Thinking as a Moderator. Multivariable analysis revealed that the relationship between positive affect and resilience was not significantly moderated by positive thoughts. This result was inconsistent with the expectation of the current study and related literature. For instance, previous research has highlighted the moderating effects of positive thoughts within the context of the

relationship between stress and resilience-related outcomes (i.e., meaning making; Boyraz &

Lightsey, 2012).

One possible explanation for this finding may be the strong correlation between positive affect

and positive thoughts. The shared covariance between these factors likely restricted the statistical

model's ability to distinguish the unique contributions of positive affect from those of positive

thoughts. As a result, future research should consider using methods that are better able to distill

purer measures of positive affect and positive thoughts.

Negative Thinking as a Moderator. Using hierarchical regression modeling, negative thinking

styles were found to moderate the relationship between positive affect and resilience. This result was

consistent with prediction. The finding suggests that higher levels of negative thinking weaken the

relationship between positive affect and resilience and is consistent with the prevailing literature.

Specifically, negative thoughts within the context of positive emotion may serve to attenuate the

proposed beneficial effects of positive emotion, as outlined by the broaden-and-build model

(Fredrickson, 1998; Fredrickson, 2013). In other words, rather than positive emotional experiences

leading to the acquisition of new personal resources and the building of new skills, people who

activate negative thinking styles in response to positive affect are likely to restrict their personal

growth and resultant resilience. This finding is consistent with previous research indicating negative

thoughts are associated with maladaptive psychological outcomes due to erroneous information

processing that changes affect and behavior (Butler, Chapman, Forman, & Beck, 2006).

This moderation effect is also consistent with models that outline the negative consequences

of "dampening" positive affect (Wood, Heimpel, & Michela, 2003). The cognitive disruption in

positive emotion may interrupt the accumulative feedback mechanisms, respectively described by

Fredrickson (2013) as an *upward spiral* and Ong et al. (2010) as a *cascade*, of positive emotion

leading to resilience, and thereby inhibit subsequent personal benefits. Therefore, creating an atmosphere rife with opportunities for positive emotional experiences combined with skills to nullify negative thoughts as they occur should act in concert to promote resilience. Future research might investigate the most efficient mechanisms by which negative thinking styles might be counteracted to enhance resilience development and activation.

Clinical Implications

The results of this study can be used to inform best practices associated with systematic and institutional functioning with regard to mental health. Principally, these results outline pathways by which institutions can promote resilience development in the individual via institutional programs and environments designed to maximize opportunities to experience positive affect. This is not to say that organizations should focus simply on keeping everyone happy at all times. Positive emotionality includes feeling determined, interested, active, and inspired. These affective states should work to promote academic goals (Martin & Marsh, 2006) and individual resilience development. For instance, universities might benefit from an institutional orientation toward activities designed to elicit positive emotional experiences in a diverse range of students. Dedicating resources toward activities such as real-world participation in discovery (e.g., fossil digs), community involvement (e.g., big brother / big sister programs, food drives), adventure outings that contribute to environmental knowledge (e.g., counting organisms in remote areas), arts and humanities multicultural opportunities (e.g., demonstrations, free movies), artistic or musical expression events (e.g., chalk drawing, drum circles), comedy or improvisation workshops, or a greater diversion of resources to athletic opportunities (e.g., intramural competition, yoga classes) should enable positive emotional experiences and thereby support resilience development.

The results of this study can also be used to inform clinical interventions. Greater resilience is associated with positive therapeutic outcomes (Rew et al., 2001; Campell-Sills et al., 2006). To help clients develop resilience, therapists might consider consistently encouraging their clients to undertake and savor positive emotional experiences while minimizing thoughts that dampen positive emotions. An example pertinent to this study might be a client who consistently recites phrases such as "I had a good experience, but it was no big deal". In this example, the automatic thought "it was no big deal" may dampen positive affect and limit opportunities for resilience development. The therapist, in this case, might approach intervention in a twofold manner, by helping the client celebrate and enhance the positive emotional experiences associated with the pleasant event and reduce activation of cognitive dampening and other intrusive negative thinking styles.

Methods to increase positive emotions. Recently, an increased emphasis on strengths-based research and psychotherapy has led to an increase in empirically supported methods to promote positive emotions. *Savoring* is one approach shown to increase positive emotion (Bryant & Veroff, 2007). This approach focuses on individuals' capability to take pleasure in their anticipation of future enjoyable events, appreciate the positives in their current circumstance, and reminisce about pleasurable experiences from the past (Bryant, 2003). Similarly, in their review of the literature, Nelis, Quoidbach, Hansenne, and Mikolajczak (2011) identified four broad strategies for enhancing positive emotion that include aspects of savoring. The themes they described included: behavioral displays of positive emotions (i.e., the physical expression of emotion which causes the experience of the emotion); mindfully savoring the moment (i.e., intentionally directing attention to pleasantness within current circumstances); capitalization (i.e., sharing positive events with others), and positive mental time travel (i.e., anticipating or remembering positive moments). Building on these constructs, Quoidbach, Berry, Hansenne, and Mikolajczak, (2010) found the utilization of these enhancement

strategies led to greater positive affect and life satisfaction. Further, positive psychology (Seligman, 2002) has helped to orient the field toward emphasizing positive emotional experiences as pathways to wellness and well-being. Many practical clinical interventions based on positive psychology, such as developing gratitude (e.g., via a gratitude journal) and focusing on sensory awareness, have been developed to cultivate appreciation of positive emotion (Burns, 2010).

Methods to challenge negative automatic thoughts. Addressing and modifying maladaptive cognitions traditionally falls within the purview of Cognitive-Behavioral Therapy (CBT) which has been extensively validated in the research (Butler et al., 2006). Cognitive interventions generally take the form of identifying underlying beliefs, treating them as hypotheses rather than facts, and then cooperatively evaluating those beliefs in terms of their accuracy and/or utility (DeRubeis, Webb, Tang, & Beck, 2010). More recently, another empirically validated approach to addressing cognitive factors has emerged in the form of Acceptance and Commitment Therapy, or ACT (Ruiz, 2012). Rather than challenge cognitions, it attempts to circumvent their influence through a process of "defusion" (i.e., detaching or distancing the self from the cognitions) and acceptance, rather than avoidance, of aversive personal experiences (Harris, 2009). Implementation of CBT and/or ACT principles to mitigate the activation of negative thinking styles in the face of positive emotions may help clients develop more resilience skills.

Limitations

The current study contains multiple limitations that include issues surrounding the study design and the characteristics of the sample. First, given the cross-sectional and correlational nature of the study, causation cannot be inferred. Future research would likely benefit from an experimental design to help clarify the nature of the relationships among these variables. Second, the model is constructed around theoretical assumptions that influence the order in which factors were entered into

the statistical model. However, this order may limit the nature of these inter-relationships. Specifically, the study assumed that automatic thoughts are best served as moderators in the relationship between positive affect and resilience; however, it is possible a more accurate description of the relationships might be, for instance, that positive affect moderates the relationship between different thinking styles and resilience. Future research might consider other models or procedures, for example using structural equation modeling to estimate model fit, to clarify the nature of these inter-relationships in a more holistic and comparative manner. Third, this study obtained data using surveys. This method is subject to potential problems including socially desirable responding or other demand characteristics that limit the potential for significant effects to be detected. Future research might consider using other methods of investigation such as behavioral measures or open-ended questions to re-evaluate some of the questions examined in the current study. Fourth, because the sample was taken from a participant pool of university students in the southern United States, the generalizability of the findings is limited. For instance, the results may not be applicable to unique cultural populations (e.g., LGBTQ and non-traditional students) that were underrepresented in the sample. Future research would benefit from a re-evaluation of these questions using a broader, more inclusive, participant sample.

General Conclusions

The current study provided unique insights into the relationship between positive affect and resilience. Results indicated that increased resilience is generally associated with positive emotional experiences. Moreover, this relationship is moderated by negative thinking. This finding is important for understanding the mechanisms involved in resilience development which, in turn, can assist organizations and clinicians in creating and maintaining conditions conducive to individuals' recovery and subsequent growth in the face of adversity.

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Table 1

Means, Standard Deviations, and Minimum and Maximum Scores for Positive Affect, Positive Thoughts, Negative Thoughts, and Resilience in Rural and Non-Rural Students

Variables (N)	Mean (SD)	Min-Max Scores
Rural Participants		
Resilience (N = 120)	95.60 (12.83)	51.00-125.00
Positive Affect (N = 117)	34.57 (6.77)	14.00-48.00
Positive Thoughts (N = 120)	103.82 (19.63)	52.00-149.00
Negative Thoughts (N = 120)	55.34 (18.41)	30.00-127.00
Non-Rural Participants		
Resilience (N = 150)	96.63 (12.69)	64.00-125.00
Positive Affect (N = 149)	35.48 (7.20)	16.00-50.00
Positive Thoughts (N = 150)	106.99 (18.81)	56.00-150.00
Negative Thoughts (N = 150)	57.91 (21.74)	30.00-150.00

Table 2

Inter-correlations among Measures of Resilience, Positive Affect, Positive Thoughts, and Negative Thoughts

Variables	RS	PA	PT	NT
Resilience	---	.51**	.69**	-.29**
Positive Affect	.51**	---	.59**	-.18**
Positive Thoughts	.69**	.59**	---	-.41**
Negative Thoughts	-.29**	-.18**	-.41**	---

Note: * Correlation is significant at the .05 level.

    ** Correlation is significant at the .01 level

RS – Resilience (CD-RISC), PA – Positive Affect (PANAS-X), PT – Positive Thoughts (ATQ-P), NT – Negative Thoughts (ATQ-N)

Table 3

Regression Models Predicting the Variance in Resilience based on Positive Affect, Negative Thoughts, and the Interaction of Positive Affect and Negative Thoughts

Variable	Beta	B	Seβ	Beta	B	Seβ	Beta	B	Seβ	R^2_{change}	F
Resilience											
Step 1										.26**	91.90
PA	.51**	.92	.10								
Step 2										.04**	16.48
PA				.47**	.85	.10					
NT				-.21**	-.13	.03					
Step 3										.01*	4.87
PA							.20	.36	.24		
NT							-.67**	-.42	.13		
PA*NT							.50*	.01	.00		

Note: * Significant at the .05 level.

    ** Significant at the .01 level

RS – Resilience (CD-RISC), PS – Positive Affect (PANAS-X), PT – Positive Thoughts (ATQ-P), NT – Negative Thoughts (ATQ-N)

Figure 1

Interaction of the Moderating Effect of Positive Thoughts and Positive Affect on Resilience
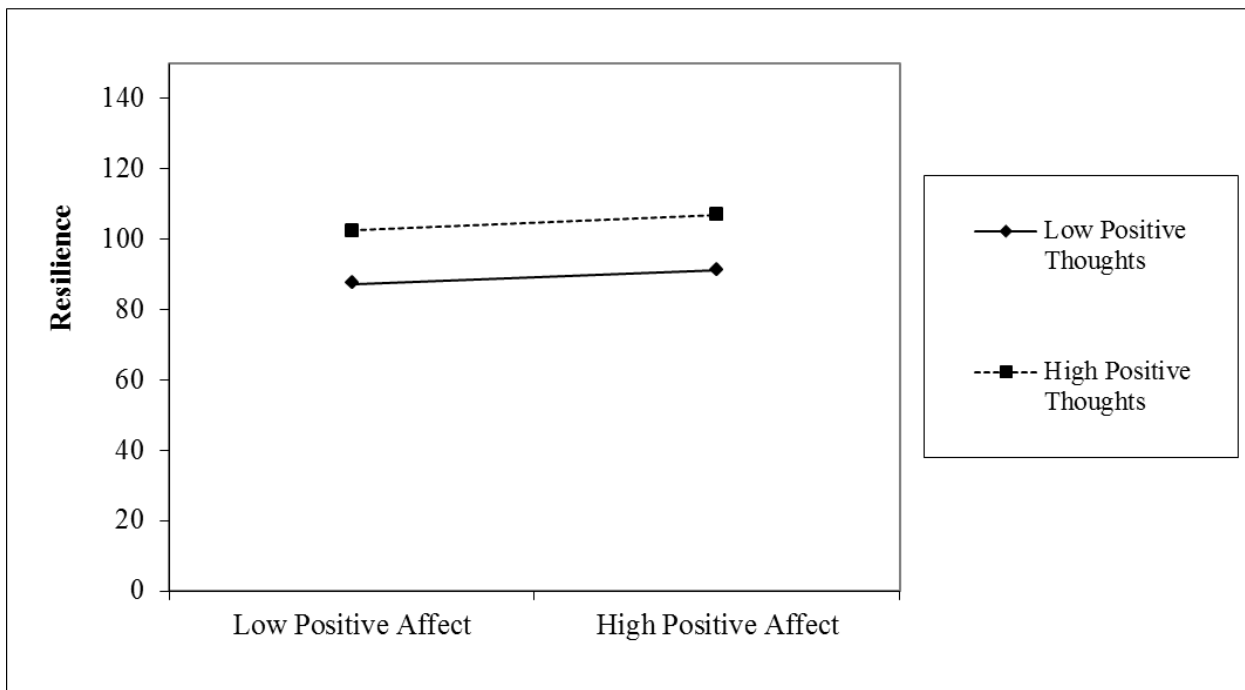

Figure 1. Association between positive affect and resilience scores at varying degrees of positive thoughts. The x-axis is centered at the mean of positive affect and the ends are -1 standard deviations (SD) and +1 SD, respectively.

Figure 2

Interaction of the Moderating Effect of Negative Thoughts and Positive Affect on Resilience
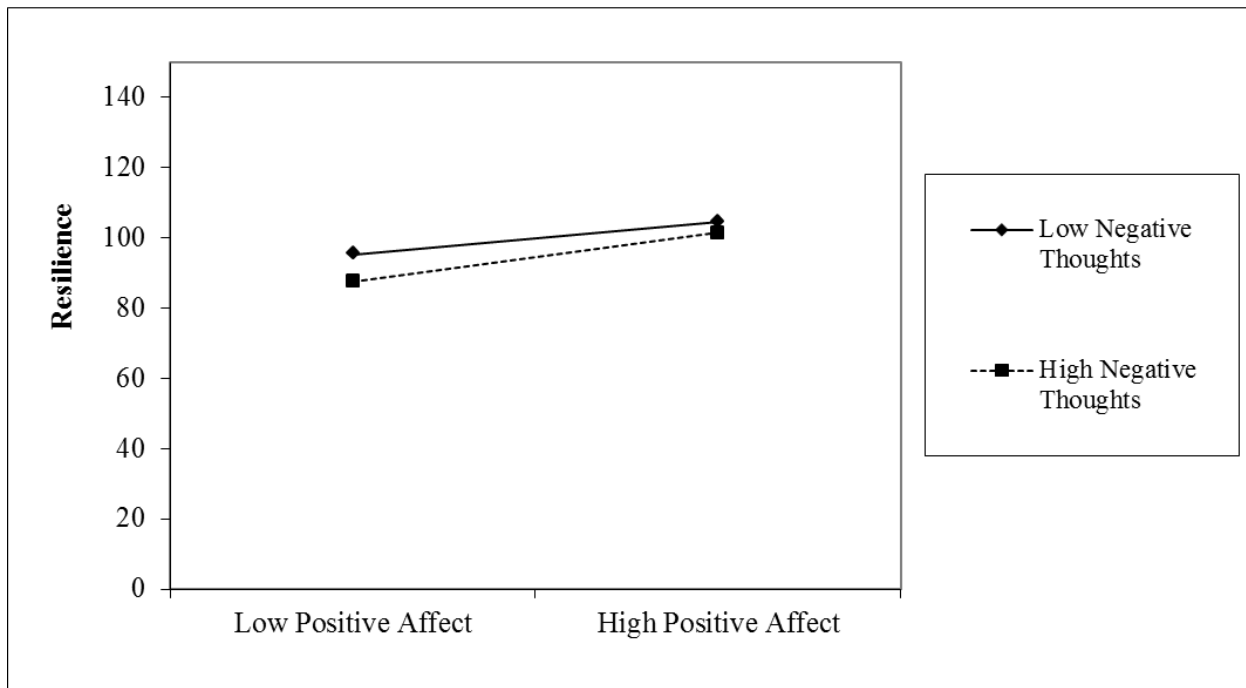

Figure 2. Association between positive affect and resilience scores at varying degrees of negative thoughts. The x-axis is centered at the mean of positive affect and the ends are -1 standard deviations (SD) and +1 SD, respectively.