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## COACHING YOURSELF THROUGH: EXPLORING THE RELATIONSHIP BETWEEN POSITIVE SELF-TALK AND RESILIENCE

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COACHING YOURSELF THROUGH: EXPLORING THE RELATIONSHIP BETWEEN  
POSITIVE SELF-TALK AND RESILIENCE

by

Ian T. Mosier

B.A., San Francisco State University, 2017

A Thesis

Submitted in Partial Fulfillment of the Requirements for the  
Master of Arts Degree

School of Psychological and Behavioral Sciences  
in the Graduate School  
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THESIS APPROVAL

COACHING YOURSELF THROUGH: EXPLORING THE RELATIONSHIP BETWEEN  
POSITIVE SELF-TALK AND RESILIENCE

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Ian T. Mosier

A Thesis Submitted in Partial  
Fulfillment of the Requirements  
for the Degree of  
Master of Arts  
in the field of Psychology

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October 27, 2020

## AN ABSTRACT OF THE THESIS OF

Ian T. Mosier, for the Master of Arts degree in Psychology, presented on October 27, 2020, at Southern Illinois University Carbondale.

TITLE: COACHING YOURSELF THROUGH: EXPLORING THE RELATIONSHIP BETWEEN POSITIVE SELF-TALK AND RESILIENCE

MAJOR PROFESSOR: Dr. Tawanda Greer-Medley and Dr. Kathleen Chwalisz

In this study, I investigated the relationship between positive self-talk, autonomy, and resilience in a sample of adults residing in America ( $n=177$ ). Forty percent of American adults ( $n=1031$ ) report daily stressors (Almeida, Wethington, & Kessler, 2002). Even comparatively minor life stressors can have a negative impact on one's well-being over time (Almeida, 2005). Resilience, the ability to manage and recover from stress, may be an important factor in long-term health and well-being (Almeida, 2005). Positive self-talk has been identified as a possible target for resilience building interventions. However, positive self-talk appears to benefit some people more than others. One possible factor in the differential impact of positive self-talk may be autonomous functioning. The primary purpose of this study was to investigate whether one's level of autonomy would influence how they use and interpret their self-talk and how that impacts their resilience, as such autonomous functioning was examined as a possible moderator in the relationship between self-talk and resilience. A sample of American adults were recruited through Amazon's MTurk system and asked to complete an online survey. The survey included measures designed to assess for self-talk type and frequency, daily hassles stress, level of autonomy, and level of resilience. Results indicated that positive self-talk was not a predictor of high levels of resilience. Nor was autonomous functioning found to moderate the relationship between self-talk and resilience. However, autonomous functioning was a significant predictor of

resilience. Implications for research and practice are discussed.

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## CHAPTER 1

### INTRODUCTION

Major life events or crises, such as job loss or the death of a loved one, can have a significant impact on one's life and health. However, such life events are comparatively rare when measured over the lifespan. Daily life stressors, such as work expectations and deadlines, occur more frequently and may, in the long-term, have a greater impact on one's overall health and well-being (Lazarus, 1999). Stressors can be routine (e.g., daily commute, stressful work environment) or occur unexpectedly (e.g., being late due to a power outage). Even comparatively minor daily stressors can have a negative impact on well-being (Almeida, 2005). Almeida and colleagues (2002) found 40% of people ( $n=1031$ ) report daily stressors, while 10% report multiple stressors per day. Stressors have the potential to disrupt everyday life, stifle goals, and lead to chronic stress and prolonged physiological arousal (Almeida, 2005).

Resilience, the ability to perform during and recover from a stressor, has been examined as a potential protective factor for both major and minor life stressors (Almeida, 2005). Individual resilience likely plays a role in our recovery from life stressors, as resilience is associated with coping abilities (Wanberg & Banas, 2000; Werner, 1993), internal locus of control (Park, 1998; Werner & Smith, 1992), and adaptiveness (Werner & Smith, 1992). Similarly, positive self-talk or self-statements are thought to serve a self-regulatory function, through self-management and self-reinforcement (Brinthaupt & Hein, 2015), and have been shown to improve people's performance while under stress (Rotella et al., 1980; Van Raalte et al., 1994, 1995), and to decrease distress and post-stressor rumination (Kross et al., 2014).

In a 2008 study of college students ( $n=30$ ), researchers found that coping strategies that involved improving or reinforcing self-esteem, self-leadership, problem-solving, optimism, and

positive affect predicted higher scores on two resilience measures, the Dispositional Resilience Scale and the Connor-Davidson Resilience Scale (Steinhardt & Dolbier, 2008). Self-talk is a likely target for a resilience-building intervention, as self-talk is associated with self-leadership (D'Intino et al., 2007), problem-solving and self-instruction (Van Raalte et al., 1994, 1995), optimism (D'Intino et al., 2007; Weinberg, 1988), and positive affect (Wood et al., 2009). Despite the potential crossover between self-talk and resilience, little research has been conducted to examine this relationship.

### **Self-Talk**

There are multiple aspects or types of self-talk, such as positive and negative self-talk, or motivational and demotivational self-talk (Reyes, 2016). Self-talk statements can contain multiple forms of self-talk, for example, one might think “I can do this!” which would be both positive and motivational. Self-talk can be seen in many settings and across the lifespan. For young children, self-talk is often spoken aloud in the form of private speech, audible speech directed toward the self (Winsler et al., 2006). Children used phrases such as “I need to put my toys away” to stay focused and manage tasks (Winsler et al., 2006). Self-talk is widely used by adults as well, with many adults reporting daily self-talk (Brinthaupt et al., 2015; Winsler et al., 2006).

While the self-talk literature is vast, much of the research is conducted within the context of athletic competition (Hardy, 2006). In studies of elite athletes, researchers have found support for the benefits of positive self-talk during stressful conditions (Rotella et al., 1980; Van Raalte et al., 1994). In contrast, negative self-talk generally impairs performance (Van Raalte et al., 1994). While self-talk is generally considered to be autonomous and self-generated (Hardy, 2006), even directed self-talk has been shown to impact performance (Van Raalte et al., 1995).

Further, some athletes have reported that over time they come to internalize the feedback and advice given by their coaches (Van Raalte et al., 1995), which may indicate that despite the self-generated nature of self-talk it could be possible intentionally modify one's self-talk statements and their use.

Outside of the context of sports, positive self-talk has been found to increase wellness (Calvete & Cardeñoso, 2002) and self-esteem while decreasing depressive symptoms and self-defeating behavior (Philpot & Bamburg, 1996). Negative self-talk has been found to increase distress (Ronan & Kendall, 1997) and negative rumination (Nolen-Hoeksema et al., 1994). However, some researchers have suggested that positive self-talk has a greater impact on health, well-being, and stress management than does negative self-talk (Calvete & Cardeñoso, 2002; Van Raalte et al., 1995).

## **Resilience**

Resilience can be generally understood as the capacity to cope with, adapt to, or recover from a stressor. Resilience has been defined and operationalized in many ways. The three primary views espoused in the literature are that resilience is a trait, a dynamic process, or an outcome (Masten, 2010). Jack Block (1950), who has been credited with the first use of resilience in psychology, defined resilience as a trait that remains consistent over time. However, the American Psychological Association's Road to Resilience guide states that resilience is not a fixed trait, instead, resilience can be developed over time, through experience and intentional learning (Comas-Diaz et al., 2017). Resilience has also been operationalized as a dynamic process with multiple factors (Luthar et al, 2000; Comas-Diaz et al., 2017), which functions primarily as a protective factor, similar to self-efficacy and coping skills. This view is more widely used than trait resilience in modern research as it integrates individual, familial, and

societal factors (Werner, 2005; Comas-Diaz et al., 2017), which may explain how resilience functions in different contexts. The third conceptualization, resilience as an outcome, is generally assessed as a response to major life stressors (Mancini & Bonanno, 2006). Recent studies have looked at outcome resilience in minor reoccurring stressors, such as those in academic settings (Reyes, 2016). Within the context of the outcome approach, resilience can be defined as an outcome or capacity for successful recovery or adaptation in response to a stressor (Masten et al., 1990; Smith et al., 2008).

### **Autonomy**

Preliminary research has linked self-talk (Oliver et al., 2010) and resilience (Pedro, 2018) with autonomy. Autonomy is volitional and value-congruent regulation of the self, informed by self-reflection (Ryan & Deci, 2017; Weinstein et al., 2012). Those in an autonomy supportive environment are more likely to use positive and motivational self-talk than people in more controlling environments (Oliver et al., 2010). Similarly, those with higher levels of autonomous motivation are more likely to use positive self-talk (Karamitrou et al., 2017). Autonomy support has also been linked to resilience in athletes (Pedro, 2018). Trait autonomy has been positively associated with autonomous motivation, empathy, positive affect, self-perceived competence, well-being, life satisfaction, mindfulness, self-esteem, and personal growth (Weinstein et al., 2012). Trait autonomy has been negative associated with depression, negative affect, anxiety, neuroticism, feelings of guilt, and experiences of daily stress (Weinstein et al., 2012).

### **Relationships among the constructs**

Research on outcome resilience involves finding people that have proven to be resilient, by recovering from a stressor or self-reported perceptions of resilience (Smith et al., 2008), then investigating what factors may have led to that outcome (Mancini & Bonanno, 2006). Positive

self-talk has been examined as one of those resilience predictive factors (Coulson, 2006; Karoly & Ruehlman, 2006). Autonomy has also been explored as a possible predictor of resilience (Pedro, 2018). The self-regulatory functions of self-talk may serve as a coping mechanism to help one prepare for, manage, and recover from stress. However, people may react to self-talk in different ways, as such there is some variability in the level of benefit gained from self-talk by different individuals (Wood et al., 2009). I theorize that autonomy may influence whether someone uses positive self-talk and possibly the way they interpret that self-talk.

### **The Current Study**

The current study is designed to fill the existing gap in the literature, as no studies have been conducted to investigate the potential relationship between self-talk, resilience, and autonomy. It was hypothesized that more frequent use of positive self-talk would predict higher levels of resilience. Karoly and Ruehlman (2006) found that higher levels of positive self-talk were positively related to higher resilience scores. It was also hypothesized that autonomy would moderate the relationship between positive self-talk and resilience. The main purpose of this study was to investigate whether one's level of autonomy would influence the relationship between self-talk and resilience. Such a finding could provide the foundation for interventions designed to increase people's future resilience through self-talk training in an environment that fosters autonomy.

The current study was survey-based, and participants were recruited using Amazon's Mechanical Turk (MTurk) service. I selected adults living in the United States as my population of interest, to allow for a more representative sample than could be obtained by recruiting from an undergraduate psychology course. Upon completion of the survey, participants were given \$0.50 as compensation for their time.

## CHAPTER 2

### LITERATURE REVIEW

#### **Self-Talk**

Self-talk can take many forms: positive/negative, motivational/demotivational, global/context-dependent, and automatic/deliberate (Reyes, 2016). Self-talk can be a response to emotionally evocative situations and can serve to help interpret one's feelings and perceptions, regulate or change one's self-evaluations, or provide reinforcement, critique, or instruction (Hackfort & Schwenkmezger, 1993). Self-talk can be seen across the lifespan. In children, self-talk is often spoken aloud in the form of private speech, with 98% of parents ( $n=48$ ) reporting that their children use self-talk (Winsler et al., 2006). Self-talk is widely used by adults as well, with self-talk being reported in 80% ( $n=82$ ) (Brinthaup et al., 2015) to 95.7% of adults ( $n=48$ ) (Winsler et al., 2006). Additionally, 72% of adults ( $n=48$ ) who reported self-talk also viewed the self-talk as being helpful (Winsler et al., 2006). Self-talk must also be differentiated from positive affirmations, which are designed to modify one's beliefs about oneself through repetition of an encouraging phrase, even when the statement is initially viewed by the individual as false (Reyes, 2016). Wood and colleagues (2009) found that when participants were assigned a positive self-statement that they did not believe to be accurate, they experienced more negative emotions.

In a 2006, Hardy conducted a critical review of the self-talk literature. The review contained an overview of self-talk as a construct, the varying definitions of self-talk, and the six aspects of self-talk: valence, overtness, frequency, self-determined self-talk, motivational interpretations, and the functions of self-talk, in an athletic context. While a seemingly simple construct, self-talk has been operationalized in many ways. Bunker and colleagues (1993)

defined self-talk broadly, stating that “anytime you think about something, you are in a sense talking to yourself” (p.226). Such a broad definition makes the measurement of self-talk difficult, as all mental activities, such as mental imagery, would be collapsed into a single construct. Theodorakis and colleagues (2001) offered a more behaviorally-based operational definition, which included body language and facial expressions, while Calvete and Cardeñoso (2002) defined self-talk as a cognitive process, which represents a person’s thoughts about themselves, others, and the world.

To more narrowly define and better measure self-talk, some researchers have opted to focus more specifically on the self-statement aspect of self-talk (Hardy et al., 2001). Self-statements have been defined as “what people say to themselves either out loud or as a small voice inside their head” (Theodorakis et al., 2000). Theodorakis et al.’s (2000) definition strays from the purely cognitive description commonly given because it addresses the overt and covert nature of self-talk. Overt self-talk, also called private speech, is self-addressed and used for the purpose of self-regulation in much the same manner as internal, or covert, self-talk (Diaz, 1992). Across each of these definitions is the implication that self-talk is self-directed or autonomous, with some definitions adding an evaluative dimension. For the purposes of this study, I am broadly defining self-talk as self-statements that serve in the function of self-regulation.

### ***Self-talk in sports psychology***

Much of the self-talk research has been conducted in sports psychology, where the effect of self-talk on performance has long been a focus (Hardy, 2016). In sports psychology, positive self-talk is viewed as assisting and negative self-talk as hindering performance (Hardy, 2016). Similarly, Weinberg (1988) posited that self-talk that improves performance through enhancing self-esteem and present-focused should be termed “positive.” On the other hand, self-

talk that is overly past- or future-focused, involves irrational, counter-productive statements, or results in anxiety should be termed “negative” (Weinberg, 1988). Positive self-talk may lead to feelings of optimism, calmness, and improved motivation, while negative self-talk is more likely to lead to discouragement or feelings of hopelessness (Weinberg, 1988). Self-talk can be used in self-reinforcement and self-management by helping one initiate action, sustain effort, or break bad habits (Weinberg, 1988).

Positive self-talk may be one factor that helps people continue to perform during stressful and challenging situations. Self-generated positive self-talk has been associated with improved performance in elite-level sports. Van Raalte et al. (1994) conducted a study examining the use and functions of positive and negative self-talk and their effect on performance in tennis matches for nationally ranked teenage athletes ( $n=24$ , median age = 15.43). The researchers used the Self-Talk and Gestures Rating Scale (STAGRS; Barr et al., 1993), a behavioral observation measure, and a five-question post-match questionnaire to assess for types and functions of self-talk. Through a qualitative analysis of the athlete’s self-reported self-talk, the researchers were able to identify three positive self-talk themes: self-motivation, calming, and strategy. Three negative self-talk themes were also identified: negative, fear of losing, and self-instruction. Using a MANOVA, comparing the match winners and losers, a significant multivariate effect was found. The athletes that lost their matches used more negative self-talk and gestures than did the winners ( $p < .02$ ). These results suggest that self-generated positive self-talk impacts performance through the mechanisms of self-motivation (i.e., self-reinforcement) and self-management (i.e., self-calming), while negative self-talk focused on self-criticism, which may hamper competitive performance.

The impacts of self-generated positive self-talk on performance appear to extend to

directed self-talk, such as that used by coaches. To explore the use of directed self-talk in performance improvement, Van Raalte and colleagues (1995) conducted a study examining the effect of assigned positive and negative self-statements on performance, specifically in the context of dart throwing. The researchers collected data from 60 male-identified undergraduate students, who were randomly assigned to positive, negative, and control conditions. Participants in the positive and negative self-talk conditions were given self-talk statements to repeat prior to each throw during the dart-throwing task (e.g., “You can do it” and “You cannot do it,” respectively). Those in the control condition were not given a self-talk statement. After the task, the participants were given the Post Dart Questionnaire, which consisted of two items, a manipulation check and a question to assess participants' future expectations of performance were they to redo the task. The researchers conducted an ANOVA and found that the positive self-talk group performed significantly better than those in the negative self-talk condition ( $p < .005$ ). The positive self-talk group also performed significantly better than those in the control condition ( $p < .05$ ). There was no statistically significant difference between the performance of the control condition and the negative self-talk condition. The results of this study suggest that positive or self-reinforcing self-talk can improve performance and that this happens even when the self-talk statement is created and enforced by another person. It is interesting to note that directed negative self-talk appears to have less impact than self-generated negative self-talk. This may be due to directed self-talk not being a true form of internalized self-criticism. Negative self-talk motivated by fear of losing, personal insecurities, or due to situations of high stress, such as the elite level competition featured in Van Raalte et al.'s (1993) study of tennis players, appears more impactful.

Although negative self-talk may impede success during high-stress situations, the

retrospective focus on past mistakes can be constructive when used in the right context, such as during practice. In a 1980 study involving elite skiers, Rotella and colleagues investigated the relationship between positive and negative thinking during both training and competition, and athletic performance, as measured by the end of season rankings. The researchers gathered 47 elite competitive skiers (median age = 15.75; 21 female) and had them complete two survey-based measures at the end of the ski season. The first measure was adapted from a questionnaire created by Mahoney and Avenier (1977). The second questionnaire was the Coping and Attentional Inventory (Rotella et al., 1980). The researchers found that more successful skiers tended to focus more on their weaknesses during practice than did less successful skiers ( $r=-.60$ ). However, this pattern reversed on the day before the competition, with more successful skiers focusing more on their strengths than less successful skiers ( $r=.54$ ). In this study, unlike the dart study, the athletes performed their self-talk autonomously, which may partially explain the potential for positive results from negative self-talk, as the athletes were able to select the volume, content, and timing of their negative self-talk. This pattern supports the idea that negative thinking or self-talk may decrease performance when used in real-life scenarios, though it may be beneficial during practice when looking to correct mistakes. Further, positive self-talk may be more motivational when used during real, competitive settings versus during practice.

Some researchers have challenged the view that negative self-talk is inherently demotivational (Hardy et al., 2001). Several researchers have found evidence that supports the idea that an individual's personal interpretation influences whether a self-statement is perceived as motivating or demotivating (Hardy et al., 2001). There may also be a contextual or temporal factor. In a 2001 study by Hardy and colleagues, high school athletes ( $n=150$ , 72 female-identified, median age = 20.68) were given a self-statement orientated definition of self-talk and

then asked to complete a four-question free-response survey regarding their use of self-talk. The athletes recorded where and when they used self-talk, the content of the self-talk, and why self-talk was used. The free-response items were broken down into text units and then sorted into four hierarchical trees using a technique called theoretical saturation. The researchers found that 73.08% of reported self-talk in the “Nature” (valence) category was positive. They also found that 73.12% of the self-talk in the “Why” category was motivational in nature, with 24.41% of that being self-reinforcement self-talk (e.g., encouragement, psyching up) and 57.35% being self-management self-talk (e.g., focusing, relaxation). The athletes reported finding their self-talk more motivationally focused right before a game than when used prior to a practice session. Another important aspect is that this pattern appears to be autonomously motivated, as illustrated by both this study and Rotella and colleague’s (1980) elite skier study. It was also found that some athletes found negative self-talk to be motivating, which may be due to a self-regulatory factor, such as self-criticism, and a desire to improve and not repeat past failures or mistakes. As in previous studies, there appears to be a retrospective phase focused on developing skills and making up for past mistakes, followed by an action phase that is focused on self-reinforcement and self-management while under stress. This dynamic mirrors processes often seen in therapy settings, in which past negative events and maladaptive coping strategies are discussed prior to working on new, more effective coping skills. Although much of the self-talk literature is focused on athletes, the self-regulatory functions of self-talk, such as self-reinforcement, can likely be generalized to the broader population, as they are also present in college students (Reyes, 2016) and children (Winsler et al., 2006).

### ***Clinical applications of self-talk***

In the field of mental health, there has generally been a greater focus on negative self-

talk. In contrast to positive self-talk, negative self-talk generally takes the form of self-criticism (Moran, 1996) and serves to impede functioning due to being counterproductive, anxiety-producing (Theodorakis et al., 2000), and past- or future-focused (Weinberg, 1998). Negative self-talk has also been associated with anxious and depressive symptoms (Ronan & Kendall, 1997). In a study of 542 children ages 7-15, Ronan and Kendall (1997) found that children who scored high on measures of anxious symptoms used more anxious and depressive self-statements than did those with low scores on anxiety and depressive symptom measures. Similarly, those with higher scores on depressive measures also used more anxious and depressive self-statements. Further, those with mixed anxious and depressive symptoms used more anxious and depressive self-statements than any of the other groups. While these findings do not support any causal inferences, there is a clear relationship between negative self-talk and depressed and anxious states of mind, likely in the form of ruminations and negative interpretations of events.

Negative self-statements are a factor in rumination, which has been associated with depressive symptoms (Nolen-Hoeksema et al., 1994). In a longitudinal study of 253 adults who had suffered a loss, Nolen-Hoeksema and colleagues (1994) found that those participants who had a ruminative style were more pessimistic overall than those who did not have a ruminative style. Further, having a ruminative style was associated with higher depression levels after six months (Nolen-Hoeksema et al., 1994). Even when controlling for initial levels of depression, social support, and pessimism, researchers found that the relationship between rumination and depression was significant (Nolen-Hoeksema et al., 1994). While ruminating, depressed individuals tend to focus on their inability to overcome their depression, lack of motivation, and hopelessness (Nolen-Hoeksema et al., 1994). Such self-talk may undercut the motivation required to change their situation or make improvements in their lives.

### *Review of self-talk*

There is strong evidence in the literature for the benefits of positive self-talk during stressful situations such as during sports competition (Hardy et al., 2001; Rotella et al., 1980, Van Raalte et al., 1994; Van Raalte et al., 1995), yet little has been done to extend those findings to the general population or in clinical samples and in response to daily life stressors or significant life events. The near-exclusive focus on self-talk in the context of sports psychology is a major limitation in self-talk research. Self-talk in athletes appears to occur automatically and autonomously while under stress (Van Raalte et al., 1994), so it seems likely that self-talk is also used in stressful situations outside the context of sports. For example, in a qualitative study of stress management techniques used by surgeons, researchers found that self-talk was commonly reported and was used to provide self-instruction and a positive inter-dialogue that reduced stress responses while performing surgery (Wetzel et al., 2006). Indeed, one can see parallels between elite athletes and those in high skill, high-stress professions, such as surgeons, who both spend considerable time in skill acquisition and refinement followed by high stakes performances. If directed self-statements can be internalized (Van Raalte et al., 1994), self-talk could be a easy target for intervention.

Another related limitation in the self-talk literature is the use of convenience samples, which consist of primarily adolescents and college students. Such a limitation leads to difficulty generalizing the findings to non-student, non-athlete populations. The studies that do exist tend to focus on negative self-talk use by people diagnosed with a mental illness (Nolen-Hoeksema et al., 1994), which again is only a subsection of the broader population.

The impact of negative or self-critical self-talk appears to be more equivocal than that of positive self-talk, with factors such as context, content, timing, and autonomy playing a

significant role in the outcomes. Negative and self-critical self-talk is associated with depression and anxiety (Ronan & Kendall, 1997), likely through the mechanism of rumination (Nolen-Hoeksema et al., 1994). Negative self-talk has also been linked to decreased performance while competing (Van Raalte et al., 1994). However, during practice or skill rehearsal, constructive negative self-talk (i.e. growth-focused self-corrective statements) may help individuals focus on improvement and skill refinement (Hardy et al., 2001; Rotella et al., 1980).

Self-talk has been associated with self-regulation skills, such as self-management, self-reinforcement, focus (Hardy et al., 2001), stress reduction (Van Raalte et al., 1994), and self-motivation (Van Raalte et al., 1994; Weinberg, 1988), and is linked to improved performance during stressful situations (Hardy et al., 2001; Van Raalte et al., 1994). All of these skills appear to work together to help people work through difficult situations and perhaps be resilient in the face of adversity.

## **Resilience**

Before delving into the relationship between self-talk, autonomy, and resilience, it is essential to review the various definitions and conceptualizations of resilience. As with self-talk, there has been much debate over the appropriate definition of resilience. The discrepancies in the definition of resilience are perhaps best highlighted by the lack of consensus on the proper way to research resilience. Masten (2014) identified four major waves of resilience research. The first wave was mostly descriptive, as previously there had been no systematic approach to the study of resilience. Operational definitions, measurement tools, and functions descriptions of positive outcomes in response to adversity were primary areas of focus for early resilience researchers (Masten 2014). The second wave of resilience research was focused on the process of resilience (Masten, 2014). Once the basic definitions and processes of resilience were established research

began to shift to promoting resilience through interventions, which was the focus of the third wave. The fourth wave is more interdisciplinary and includes the use of genetics, neuroscience, and neuroimaging (Masten, 2014). During the fourth wave, researchers introduced systems theory conceptualizations that include consideration of genetics, personal context, multilevel analyses, and the integration of multidisciplinary research findings (Masten, 2014).

Studies on resilience focus on recovery from or living with adverse situations or conditions, such as low socioeconomic status or experiences of poverty (Garmezy, 1991; Garmezy et al., 1984; Werner & Smith, 1989); cancer (Antoni & Goodkin, 1988); racial or ethnic discrimination (Lee, 2005); post-traumatic stress disorder (King et al., 1998); childhood abuse (Chambers & Belicki, 1998); parental mental illness (Garmezy, 1974; Masten et al., 1990; Masten & Coastworth, 1995); and chronic illness (Patterson & Garwick, 1994).

In the field of psychology, the construct of resilience has been defined in multiple ways: as a trait, as a dynamic process or system, or as an outcome. In the American Psychological Association's Road to Resilience Guide, resilience is described as a dynamic trait that can be developed over time through experience and intentional learning (Comas-Diaz et al., 2017). Resilience has been operationalized as a process with multiple factors, which functions as a protective factor that reduces the impact of a stressor (Luthar et al., 2000; Comas-Diaz et al., 2017). The process view is more widely used than trait resilience in modern research as it integrates individual, familial, and societal factors (Comas-Diaz et al., 2017; Werner, 2005), which may explain how resilience functions in different contexts. The third conceptualization, resilience as an outcome, is generally assessed as a response to major life stressors (Mancini & Bonanno, 2006). Recent studies have examined outcome resilience in minor reoccurring stressors, such as those in an academic setting (Reyes, 2016). Within the context of the outcome

approach, resilience is “the ability to bounce back or recover from stress” (Smith et al., 2008). In the current study, I used the brief resilience scale (Smith et al., 2008) to measure the participant’s perceived ability bounce-back from a stressor, aspect of outcome resilience.

### ***Ego resiliency theory***

Jack Block (1950) has been credited with the first use of the term resilience in psychology, in his ego resiliency theory. Block and Kremen (1996) described resilience as a continuous trait, ego resiliency, with some people being ego-resilient and others ego-brittle, and as a process, ego resilience, in which one recovers from a stressor to a state of ego health. Those with higher levels of ego resiliency are predicted to be better able to adjust to and recover from adverse situations (Block & Kremen, 1996). Block and Kremen (1996) further state that a healthy ego leads to better self-esteem and interpersonal relatedness, whereas a brittle ego leads to anxiety. Block and Kremen (1996) indicated that ego is an evolution-derived dual hierarchical system that works under the “pleasure principle,” defined as pleasure-seeking and pain avoidance, and the “reality principle,” defined as the ability to perceive and assess the reality of the world and act upon it. Ego resilience is a proposed mechanism for ego recovery after a stressor based on internal motivation and impulse control (Block & Kremen, 1996). Ego resiliency is maintained through the sequential activation of ego structures that help return the individual into a state that is psychologically tenable. In Block’s conceptualization, trait resiliency encompasses a set of traits that reflect resourcefulness, sturdiness, and the ability to be flexible in response to changing circumstances (Luthar et al., 2000), so that one is “engaged with the world but not subservient to it” (Block, 1969). The concept of engaging with the world in an autonomous manner is paralleled in autonomous functioning research (Weinstein et al., 2012).

### ***Criticism of ego resiliency theory***

Resilience as a trait has been criticized due to concern that it may create a falsely dichotomous view in which some people have the ability to overcome adversity, and others simply do not (Luthar et al., 2000). A trait-based perspective offers little to explain the processes underlying resilience, the etiology, or possible targets for resilience building interventions (Luthar et al., 2000). Further, some studies have shown that while someone might show resilience in one domain, they may show deficits in others (Kaufman et al. 1994; Luthar, 1991). It seems counter-intuitive to view a construct like resilience, which is centered on adaptation and recovery, as a fixed trait rather than a dynamic process that is influenced by development and context.

### ***Resilience as a Process***

Luthar and colleagues (2000) defined resilience as a “dynamic process encompassing positive adaptation with the context of significant adversity” (pp.1). In this model, resilience requires both an adverse situation and evidence of positive adaption (Luthar et al., 2000). Similarly, Masten (2001) defined resilience as “a class of phenomena characterized by good outcomes in spite of serious threats to adaptation or development” (pp.228). Resilience phenomena include the process of effectively coping with stress or challenges, recovery from or success after adverse events or catastrophes, and post-traumatic growth (Masten, 2014). Based on Masten’s (2001) definition, the study of resilience is aimed at gaining a better understanding of the process that accounts for positive outcomes after an adverse event. Using Masten’s (2001) definition, resilience can only exist in response to a significant threat to development, either current or in the past. Further, there needs to be evidence that the risk factors in question can be considered predictors for poor outcomes (Masten, 2001).

Risk factors such as socioeconomic status, maltreatment, or exposure to violence are examples of commonly used predictors (Masten, 2001). Risk factors are often interrelated, such as low SES and decreased educational opportunities, so some researchers use the term cumulative risk rather than operate as if risk factors are separable and discrete (Masten, 2014). As a primarily developmentally focused researcher, Masten (2014) focused on positive development despite being at high risk for future problems or maladjustment. In an effort to improve cross-disciplinary research, Masten (2014) later refined her definition of resilience as “the capacity of a dynamic system to adapt successfully to disturbances that threaten system function, viability, or development” (p.10).

### ***Review of Resilience as a Process***

The major limitation for the use of the construct of resilience as a process is that there is an inherent expectation that resilience can only exist, and thus only be measured, in cases in which there has been a history of adverse events. While this might be useful in many research designs, the requirement of significant adverse events makes process resilience less suited for the study of resilience to daily stressors, for predicting resilience in individuals who have yet to experience adverse events, or in the creation of resilience building interventions.

### ***Resilience as an Outcome***

Mancini and Bonanno (2006) stated that resilience must be defined as an outcome, as they believed the only way to predict resilience was through the study of individuals that exhibit resilience after a highly stressful and potentially traumatic event, examining factors that promote or detract from resilient outcomes. Using Mancini and Bonanno’s (2006) conceptualization, outcome resilience can be measured by comparing two groups of people that have equivalent risk factors but differing outcomes. For example, some people who grow up in an area plagued by

violence end up involved in crime whereas others might become small business owners. Alternatively, Smith and colleagues (2008) stated that the original and most basic definition of resilience is the ability to bounce back (i.e., return to baseline functioning). Thus, the outcome is a successful recovery from a stressor, either large or small. Using Smith and colleagues' (2008) conceptualization, resilience can be measured by self-reported perception of resilience, theoretically, developed after experiencing and recovering or adapting from a stressor. The conceptualization of resilience as an outcome suits research aimed at identifying the mechanisms associated with recovery from a stressor (Kalisch et al., 2015). Due to the exploratory nature of the current study and my interest in examining self-talk as a mechanism underlying resilience, I have chosen to use outcome resilience. To this end, I have adapted a definition of resilience from Masten et al. (1990), resilience is an outcome or capacity for successful recovery or adaptation despite challenging circumstances.

Outcome resilience has been linked to effective therapy. Reyes and colleagues (2018) conducted a review of trauma-focused interventions that feature resilience as an outcome. After a review of the literature, 17 intervention studies were identified. Reyes and colleagues (2018) found support for the concept of outcome resilience as a measure of PTSD intervention effectiveness. The authors concluded that effective trauma-focused interventions are associated with decreased PTSD symptoms and increased self-reported resilience. Further, there was a negative association between the severity of PTSD symptoms and resilience. Similar results were found by Siriwardhana and colleagues (2014) in their systematic review of research regarding resilience and mental health for forced migrants. The researchers found that resilience was generally associated with better mental health.

### ***Review of resilience as an outcome***

Outcome resilience does not appear to oppose process resilience. They are seemingly two sides of the same coin. The difference between the two is primarily due to the need for various study designs. Should researchers look at the process and call it resilience? Or should they look at the outcome of the process as resilience? The most significant limitation to outcome resilience is that this conceptualization has more recently entered the literature, and thus, there are fewer studies that use this definition. However, despite its relatively recent entry into the literature, many resilience measures, such as the Brief Resilience Scale (Smith et al., 2008), are designed to measure outcome resilience.

### **Autonomy**

Autonomy was a factor in many self-talk studies (Hardy et al., 2001; Rotella et al., 1980). Pedro (2018) also found a relationship between autonomy and resilience. Simply stated, autonomy is volitional and value-congruent regulation of the self, informed by self-reflection (Ryan & Deci, 2017; Weinstein et al., 2012). Autonomous or volitional behavior has been associated with lower stress and higher well-being (Weinstein & Ryan, 2011), learning engagement (Roth et al., 2007), positive therapy outcomes (Patrick & Williams, 2012; Ryan & Deci, 2017), and increased energy and vitality (Ryan & Frederick, 1997). Autonomy has been linked with intrinsic motivation (Ryan & Deci, 2017) and been associated with experiencing congruence between one's behavior and one's values and interests (Weinstein et al., 2012). Autonomous behavior is regulated by the self rather than external forces or values (Deci & Ryan, 1985; Ryan & Deci, 2000; Weinstein et al., 2012). External forces or contingencies are viewed as social pressures or self-esteem-based internalizations of external value judgments (Ryan & Deci, 2000).

Weinstein and colleagues (2012) distinguished autonomy from self-reliance (i.e., reliance on only one's own effort) or independence (i.e., the ability or preference to act on one's own), as autonomy does not preclude willful dependence or in some cases being forced to rely on others. Weinstein et al.'s (2012) distinction is essential as, in theory, those from collectivistic cultures may value interdependence, which would mean those that have internalized that cultural value may find self-reliance or independence to be incongruous.

Autonomy can be influenced by situational factors, but dispositional autonomy is largely shaped by inter and intra-personal experiences over time (Ryan & Deci, 1985). Those with higher dispositional autonomy experience higher congruence or integration between actions and personal values and view their behavior as more self-initiated (Ryan & Deci, 2000) Low autonomy is associated with a sense that one's behavior is controlled by external factors (Ryan & Deci, 2000), leading to an external locus of control and feelings of incongruence.

### ***Self-determination theory***

Much of the research on autonomy has been conducted using Ryan and Deci's (1985) Self-Determination Theory (SDT) framework. There are three core psychological needs in self-determination theory: competence (perceiving oneself as capable), relatedness (a sense of belonging with and connection to others), and autonomy (perceiving one's behavior as volitional and congruent with one's values) (Weinstein et al., 2012). In SDT, autonomy is generally divided into autonomy support and dispositional or functional autonomy (Weinstein et al., 2012). Autonomy support is examined as a behavior of those in positions of authority (e.g. parents, coaches, teachers, therapists) and as an element of program or intervention design (Ryan & Deci, 2017). It is theorized that when levels of autonomy support are high people are more intrinsically motivated, feel a greater sense of competence, have higher self-esteem, and have better overall

outcomes (Ryan & Deci, 2017).

Dispositional autonomy involves a perceived authorship of one's actions, a sense of congruence between those actions and one's values, and an internal locus of control (Ryan & Deci, 2017). Highly autonomous individuals may experience greater levels of authorship, more receptiveness to experiences, and lower levels of susceptibility to control or introjected forms of regulation (Weinstein et al., 2012; Ryan, 1982). Of importance for the current study, the measure of autonomy selected, the index of autonomous functioning (IAF), was theoretically derived from SDT principles.

### ***Autonomy in practice***

As a theory of autonomy, self-reflection, and motivation, the SDT framework has been used to examine behavior change. Gillison and colleagues (2018) conducted a systemic review and meta-analysis of health intervention based on SDT. The researchers identified 74 articles that met criteria for inclusion, most of which were randomized-controlled trials. Gillison and colleagues (2018) identified 21 SDT-specific techniques and 18 SDT-based strategies (e.g., providing rationale, providing support and encouragement) that impacted the theorized SDT mediators of health behavior change. Of the mediators analyzed, autonomy support and needs satisfaction had large effect sizes. Gillison and colleagues (2018) concluded no single technique was predictive in isolation, when used in combination they positively impacted outcomes. This finding illustrates the interconnected nature of SDT and the need for multiple techniques that work in conjunction to create an autonomy supportive intervention for behavior change.

The SDT framework has also been linked to the therapeutic approach of motivational interviewing (MI), which is commonly used with clients that are dealing with substance use issues (Patrick & Williams, 2012). Although MI is considered an evidence-supported approach,

it has been criticized for not having a strong theoretical foundation. In their review of the literature, Patrick and Williams (2012) found support for the theoretical and practical overlap between SDT principle and MI. Further, in outcome studies, there appeared to be a relationship between use of SDT principles and increased motivation for behavior change, a primary goal of MI.

### ***Relevance of autonomy outside of western society***

Although autonomy has been primarily studied in the context of Western culture, several studies have supported the cross-cultural relevance of autonomy and self-determination theory. Nalipay and colleagues (2020) conducted a study to explore the cross-cultural universality of self-determination theory and the subdimensions of relatedness, autonomy, and competence. Drawing data from the Organization for Economic Co-operation and Development – Program for International Student Assessment, the researchers used multi-group confirmatory factor analysis and multi-group structural equation modeling to analyze the data of college students from 5 Western societies and 6 Eastern societies ( $n = 92,325$ ). The researchers found no significant mean differences between the Eastern and Western group with regard to autonomy. Additionally, autonomy was a significant predictor of achievement for both groups. Nalipay and colleagues concluded that autonomy was equally important for students in both groups. The researchers cautioned that there are some limitations to using a strict dichotomy of collectivist and individualist, yet their study does provide further support for the cross-cultural universality of autonomy.

In a cross-cultural study of autonomy support, a predictor of dispositional autonomy, Taylor and Lonsdale (2010) surveyed high school-aged students ( $n = 715$ ) from the UK and Hong Kong who were participating in physical education classes. Taylor and colleagues found

that autonomy support predicted perceived competence and motivation to participate in the physical education activities. In other words, students who perceived their instructor as being more supportive of their autonomy were more like to participate and feel a sense of competence in the skills they were developing. Interestingly, for students in the Hong Kong sample, the relationship between autonomy support and perceptions of competence was stronger than for those in the UK sample. Tayler and colleagues theorized that due to the principle of filial piety, the supportive behavior of the instructor in Hong Kong may have been more influential and lead to greater feelings of competence. This study provided support for the cross-cultural relevance of autonomy support in improved functioning.

### **Relationships among the constructs**

#### ***Self-talk and resilience***

To date, comparatively little research has been done involving the relationship between resilience and self-talk, despite the potential importance of self-talk as a self-management strategy during stressful or adverse events (Papaioannou & Hackfort, 2014). In a 2006 study of college students, Coulson found that the frequency of self-talk was related to an individual's level of resilience, based on self-perceived resilience and resilience-related characteristics (e.g., optimism, problem-solving ability). Similarly, in a study of adults suffering from severe chronic pain, Karoly and Ruehlman (2006) found that resilient participants reported significantly higher levels of positive self-talk than did those in with low resilience scores. Hames and Joiner (2012) examined the role of self-esteem as it relates to self-talk and resilience in college students, and found that using a positive self-statement increased the recovery from a laboratory stressor task for individuals with high self-esteem, but the effect was not as beneficial for those with lower self-esteem. More recently, Reyes (2016) found that self-talk mediated the relationship between

approach motivation and resilience in college students.

### *Self-talk and Autonomy*

Oliver, Markland, and Hardy (2010) hypothesized that people in autonomy supportive environments would utilize more positive and motivational self-talk than those in controlling environments. In a randomized mixed-methods design study of university students ( $n=70$ ), Oliver and colleagues (2010) found that participants in the autonomy-supportive condition used more positive self-talk than did those in the controlling condition. Further, those in the autonomy-supportive condition used less negative self-talk than did those in the controlling condition. In the qualitative analysis, they found that those in the autonomy-supportive condition more frequently used motivational/encouraging, concentration/focus, planning/strategic, and positive feelings self-talk. In fact, the categories of concentration/focus and positive feelings were exclusively present in the autonomy-supportive condition. This suggests that a certain level of autonomy may be needed to motivate one to use positive self-talk.

Self-talk and autonomy have further been examined by Karamitrou et al. (2017). The researchers conducted a survey-based cross-sectional study to investigate the relationship between automatic self-talk, basic needs satisfaction, and motivational regulations. The researchers collected data from 381 teenage athletes from Greece. The authors aimed to test if there was a direct relationship between the basic need variables, autonomy, relatedness, and competence; and both positive self-talk and negative self-talk, as well as a mediated or partially mediated relationship using autonomous motivation and controlled motivation as mediating variables. The authors reported descriptive statistics and three structural models. Of note, the researchers found that autonomy was significantly correlated with “Psych up” and “Confidence,” two elements of self-reinforcement self-talk. They also found a significant association between

autonomy and self-instruction, which is a facet of self-regulatory self-talk. Of the three structural models, the partially mediated model was the best fit. They found significant positive direct effects for autonomy on positive self-talk, need for autonomy on autonomous motivation, and autonomous motivation on positive self-talk. As might be predicted, the researchers found negative direct effects were found for autonomous motivations on negative self-talk, and though not significant, between the need for autonomy on negative self-talk. Additionally, the researchers reported that autonomous motivation partially mediated the relationship between the need for autonomy and positive self-talk. Overall, their model explained 20% of the variance for positive self-talk and 27% of the variance for negative self-talk. This study illustrates the connection between positive self-talk and autonomy. Further, it highlights the common thread of self-regulation in the constructs of self-talk and autonomy, which is also a factor in resilience.

### ***Autonomy and Resilience***

In a 2018 study, Pedro used a Self-Determination Theory framework to examine the constructs of autonomy support and athlete engagement and their relationship to resilience. The researchers collected data from 177 athletes, with 78 being female-identified and a median age of 16.36, who played a range of individual or team sports. Pedro (2018) found resilience was significantly associated with all variables assessed in the study: autonomy support, engagement, confidence, dedication, vigor, enthusiasm, and performance perception. Of note, autonomy support had the lowest correlation with resilience. However, that may be due to other variables, such as engagement, being facets of autonomous motivation, which being an intra-personal factor may have a larger impact on resilience. Using a simple linear regression, Pedro (2018) also found that resilience was significantly predicted by autonomy support perception and engagement.

### ***Summary of Relationships among the constructs***

Similar to the literature on self-talk and resilience, there is preliminary evidence for a relationship between the constructs of autonomy, self-talk, and resilience. To date, there do not appear to be any studies that examine all three constructs together. Yet there is some theoretical support for the interactions hypothesized in the current study. Autonomy may moderate an individual's use of positive self-talk (Oliver et al., 2010), and those that report more frequent positive self-talk tend to have higher levels of resilience (Coulson, 2006; Karoly and Ruehlman, 2006). This dynamic is important, as assessing the autonomy of your target population may be needed when designing or implementing a self-talk intervention aimed at building resilience. An individual's level of autonomy is also influenced by autonomy support, so it may be beneficial to integrate autonomy support into any such intervention.

### **The Current Study**

People face a number of daily stressors, many of which are out of their control (e.g., a traffic jam due to a car accident), so being resilient, having the ability to manage, bounce back, or adapt after stressors, is important for long-term well-being (Almeida, 2005). Interventions that effectively enhance resilience could have a significant impact on people's quality of life and well-being. Positive self-talk is a likely target for the creation of such an intervention, as it is an easily taught skill that has been shown to enhance one's ability to perform under and recover from stress (Hardy, 2001). However, further research is needed to assess the effects of self-talk outside of the context of sports. Additionally, motivation and autonomy appear to play a role in people's use and interpretation of self-talk (Oliver et al., 2010). The main purpose of this study is to investigate whether one's level of autonomy would influence how they interpret their self-talk and how that impacts their resilience.

In order to address the current gaps in the literature, I examined the relationship between self-talk and resilience. Further, I explored if autonomy acts as a moderator between self-talk and resilience. Therefore, I examined the relationship between self-regulatory self-talk and resilience in a sample of adults residing in America.

## CHAPTER 3

### METHOD

This was an online survey-based study of adults currently residing in America, to investigate the unique effect of self-talk and autonomy on resilience. The predictor variables were self-management self-talk and self-reinforcement self-talk, and the outcome variable was resilience. I hypothesized that autonomy would moderate the relationship between self-talk and resilience. The main purpose of this study was to investigate whether one's level of autonomy would influence how they interpret their self-talk and how that impacts their resilience.

#### **Participants**

Participants in this study were 177 U.S. adults who participated via the MTurk survey platform. The original sample was 192, however 12 participants were removed due to suspected use of bots, and an additional 3 participants were removed due to missing data. Participants were marked as bots if their answers on the free response items were composed of random words or when they had multiple typed answers that consisted of text unrelated to the item prompt. An a priori power analysis was conducted using G\*Power 3.1.9.4 (Faul et al., 2009), to estimate the number of participants necessary to have a power of .80. The results indicated that 78 participants would provide a power of .80 to detect a medium effect size (.25) maintaining an alpha of .05. The *critical f* (11, 66 = 1.94). To account for the potential of missing data, I decided to oversample.

#### **Measures**

**Demographic Information.** Demographic information for the participants is presented in Table 1. A demographic questionnaire was created for this study, which included ethnicity, age, gender identity, sexual orientation, and education level were requested (see Appendix A). For the

main study analyses, the gender variable was dummy coded (men = 0; women = 1). Subjective social status was assessed using the MacArthur Scale of Subjective Social Status (Adler et al., 2000; see Appendix C).

**Self-Talk.** The Self-Talk Scale was selected to measure self-talk frequency across two dimensions, Self-Management and Self-Reinforcement, (STS; Brinthaup, et al., 2009; see Appendix D). The four item Self-Reinforcement subscale includes items related to feeling proud of oneself or one's actions. The four item Self-Management subscale includes items related to self-instruction. The STS is a sixteen-item scale that was designed to capture participants' overall frequency of self-talk use and the specific self-regulatory functions of that self-talk. The STS features a 5-point Likert type scale with responses ranging from 1 (*Never*) to 5 (*Very Often*). Higher scores indicate higher utilization of that form of self-talk. Researchers reported an internal consistency of  $\alpha = .93$ . Reported test-retest stability was  $r(72) = .69, p < .001$ . Further normative data provided in Table 2.

Brinthaup and colleagues conducted a series of seven studies to create and validate the Self-Talk Scale (STS). In study one, the researchers generated 90 items based on existing measures and a review of the self-talk literature, which were then reviewed by experts in the field. The researchers completed a principal components analysis, with data from 267 participants. The 22 items with the highest factor loading were selected for the scale, and a high internal consistency was found ( $r = .93$ ). In the second study, the researchers collected data from 767 college students (459 female, 294 male) and conducted an explanatory factor analysis, followed by a confirmatory factor analysis. A four-factor structure emerged. The researchers named the four factors: Social Assessment, Self-Criticism, Self-Reinforcement, and Self-Management. For the current study, only the self-management and self-reinforcement subscales

were used in the analysis, as they represent aspects of positive self-talk.

**Resilience.** Resilience, defined as the ability to bounce back or recover from stress, was measured with the Brief Resilience Scale (BRS) created by Smith and colleagues (2008; see Appendix E). The BRS contains six-items and uses a 5-point Likert type scale with responses ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The scores are summed and then averaged to find the final score. Higher scores indicate higher levels of resilience. Researchers reported that the scale had an internal consistency range of  $\alpha = .80-.91$  across four samples ( $n=128$  students, 64 students, 112 cardiac patients, 50 women diagnosed with fibromyalgia). Researchers reported a test-retest reliability of .69 ( $n=48$ ) after one month for one sample and .62 ( $n=61$ ) after three months for a second sample. In a methodological review of 19 resilience measures conducted by Windle, Bennett, and Noyes (2011), three scales were found to have the best psychometric ratings for internal consistency, convergent, and discriminant validity, the BRS, the Connor-Davison Resilience Scale, and the Resilience Scale for Adults. In addition to the original adult American samples, the BRS has been validated with adult populations in Spain ( $n=620$ ,  $\alpha=.83$ ; intraclass coefficient =.69; Rodríguez-Rey et al., 2015), in China ( $n=268$ ,  $\alpha=.76$ ; Lai and Yue, 2014), and Hong Kong ( $n= 547$ ,  $\alpha=.72$ ; Lai and Yue, 2014).

**Autonomy.** Dispositional autonomy was measured using the Index of Autonomous Functioning scale (IAF) created by Weinstein and colleagues (2012; see Appendix F). The IAF is a fifteen-item survey-based 5-point Likert type scale with responses ranging from 1 (*not at all true*) to 5 (*completely true*). The total score is calculated by averaging the item scores. Higher scores reflect a higher level of autonomous functioning. The IAF has three optional subscales, Authorship/Self-Congruence, Susceptibility to Control, and Interest-Taking. For the purposes of this study, I used the total score.

Weinstein and colleagues (2012) conducted seven studies to develop and validate the IAF. The researchers started with an initial pool of 198 items, which were refined to the 15 items on the current scale through a five-step process, empirical items support, conceptual item support, scale structure with exploratory factor analyses, item relations, and confirmatory factor analysis. For the CFA, participants ( $n=1005$ , 887 men, aged 18-58,  $M= 33.02$ ) from 16 countries were recruited online. A three-factor structure was found with loading of .64 to .90 for authorship/self-congruence, .53 to .89 for interest-taking, and .57 to .83 for susceptibility to control. Using a sample of college students ( $n=160$ , 114 women, aged 18-32,  $M=32$ ), researchers found that the scale had an internal consistency of  $\alpha = .82$  and a test-retest reliability of  $ICC = .86$ ,  $CI = .81$  to  $.90$ ,  $F = 7.09$ ,  $p < .001$ , over a 6-month period.

**Daily Hassles.** Daily hassles severity was measured using hassles subdimension of the Daily Hassles and Uplifts Scale created by Kanner and colleagues (1981; see Appendix G). The daily hassles subdimension consists of 118 scale items and one free response item regarding recent major life events. The scale items are ranging from 1 (*somewhat severe*) to 3 (*extremely severe*). Items that were not relevant to the participants experiences are skipped. For the purpose of this study, skipped items were coded as 0. There are three possible summary scores: frequency of response, severity, and intensity. For the current study I used the severity score, which is obtained by summing respondent ratings across all items. The hassles scale was used to control for the effect of daily hassles stress. However, it was entered in step two of the regression due to the large portion of the variance that it accounted for.

## **Procedure**

**Data Collection.** Following approval from the Human Subject Committee at Southern Illinois University Carbondale (SIU-C), participants were recruited through Amazon MTurk. On

the MTurk system, participants were given the following study description, “Participate in a psychological study about life experiences and autonomy.” Further information regarding the purpose of the study was provided on the debriefing form. The informed consent document (see Appendix F), demographic questionnaire, and three measures were entered into Qualtrics as a single session online survey. After survey completion qualifying participants were given a unique compensation code, redeemable for \$.50. To participate, participants were asked to review the informed consent document and indicate “Yes” if they agree to the terms of the content document and were at least 18-years of age. Participants completed the four measures, followed by the demographic questionnaire. The demographic question was included last, to avoid priming the participants when completing the measures. Upon completion, participants were asked to review a debriefing form.

Participants were recruited using Amazon’s online service, Mechanical Turk (MTurk), which connects participants with paid survey opportunities. MTurk was used in the current study, as it offers the opportunity to gather a broader, more representative sample than an undergraduate student sample would provide. Past research has shown that MTurk participants represent a wide range of the population across dimensions of race, ethnicity, age, and socioeconomic backgrounds (Arditte, et al., 2016). I collected data in three waves so as to better monitor the demographic variables of the completed surveys. Some concerns have been raised regarding MTurk samples, as there is no control or monitoring of the survey-taking environment, which may lead to inattention (Cheung et al., 2017). To address the risk of inattention, free response items were added to the survey items to ensure participations were responding with intention. Qualifying participants were compensated \$0.50.

## CHAPTER 4

### RESULTS

Participants for this study were recruited through Amazon's MTurk service. This source was chosen with the goal of collecting a more diverse sample than would be obtained through sampling a university research pool. As the current study is focused on resilience in the context of daily or chronic stressful events rather than a single traumatic event, gathering participants with varied life experiences was important. Overall, the goal was met, as the sample gathered includes a wide range in regard to education level, subjective social status, and age.

#### **Description of the Participants**

Demographic details can be found in table 1. Most participants indicated that their country of origin was the United States ( $n = 174$ ), although a small number indicated that they were born in other countries ( $n = 6$ ). The mean age of the participants was 35.51 years ( $SD = 11.03$ ). For the purpose of analysis, the female ( $n=82$ ) and transgender female ( $n=1$ ) groups were collapsed, such that male was coded as 0 and both categories of female identified people coded as 1. In terms of sexual orientation, 155 identified as heterosexual, 16 identified as bisexual, 5 identified as lesbian, 2 identified as gay, 1 identified as asexual, and 1 identified as pansexual. Sexual orientation was recoded as heterosexual =1 and LGBTQ+ =0, to create dichotomous variables. Approximately 15 % ( $n = 27$ ) of participants indicated that they had experienced a physical or mental health crisis that resulted in hospitalization in the last 12 months. The Subjective Social Status of participants normally distributed ( $M = 5.72$ ,  $SD = 2.04$ ), with skewness of .052 ( $SE = .181$ ) and kurtosis of -.414 ( $SE = .36$ ). Participants indicated a range of educational experience, 8 indicated earning a high school degree, 27 indicated some college, 15 indicated earning an associate degree, 111 indicated earning a bachelor's degree, and 19

indicated earning a graduate-level degree. Education variables were recoded so that some college or below = 0 and having a bachelor's degree or above = 1. Having a higher level of education was significantly related to having a high subjective social status ( $r = .232, p > .001$ ). Approximately 36.7% ( $n = 66$ ) of participants indicated that they had experienced trauma at some point in their lives. There was a statically significant correlation between being female-identified and experiences of trauma ( $r = .157, p > .05$ ). Which is to say, participants that self-identified as female more often reported experiences of trauma.

### **Descriptive Statistics for the Measures**

Means, standard deviations, and internal consistency coefficients were calculated for the four scales used in this study (see Table 2). Table 2 also includes similar information from the normative samples for the instruments. The STS, BRS, and Daily Hassles Scale received high Cronbach's Alpha coefficients, which indicates a high internal consistency. The Cronbach's Alpha for the IAF was moderate, which indicates an adequate internal consistency. Participants in the current study endorsed higher levels, roughly equivalent to one standard deviation, of daily hassles stress than the normative sample. These participants endorsed lower levels, roughly equivalent to one standard deviation, of autonomous functioning than the normative sample. The self-talk total score, self-management subscale score, self-reinforcement subscale score, and resilience score were close to equivalent to the normative samples. In comparing the current sample to the normative sample, it appears that on average those in the current sample experience greater daily hassles stress and exhibit lower levels of autonomous function. The normative samples consisted of university students who could be expected to have a narrow age range, roughly equivalent levels of education, and potentially a narrower range of daily hassles. In contrast, the current sample has a wide age range with a median age (35.51 years old) outside

the traditional college cohort, and a wider range of education with 73.44% of participants reporting a bachelor's degree or higher. It is possible that those in the current sample are in a different life phase, and thus having a wider range of responsibilities and experiences of stressful life events.

Pearson correlations were calculated for all principle variables, and the correlation results are presented in Table 3. As one might expect the self-talk variables were significantly associated. Self-talk was not correlated with other key constructs in this study as anticipated. Stress, in contrast, was significantly correlated with all of the other constructs measured in this study. Both autonomous functioning and resilience were negatively associated with stress.

### **Tests of the Hypotheses**

The hypotheses were then tested using correlation and regression analyses. Hypothesis 1 was tested using Pearson correlation as previously described and presented in Table 3. Hypothesis 2 was tested using hierarchical linear regression.

The regression analysis was conducted in a four-step process. First, demographic variables and history of recent mental health problems were entered, followed by the scores for daily hassles and self-reported trauma experience in the second step. For the third step, self-management self-talk and self-reinforcement self-talk variables were entered. For the fourth step, autonomy scores were entered, followed by the interaction terms (i.e., Autonomous Functioning  $\times$  Self-Management Self-Talk, Autonomous Functioning  $\times$  Self-Reinforcement Self-Talk) for the final step. To avoid the problem of multicollinearity, predictors and interaction terms were centered before regression analyses were conducted (Aiken & West, 1991; Holmbeck, 2002). All categorical variables were dummy coded before entering them in the regression.

Table 4 shows the multiple linear regression estimates including the intercept and the

significance levels. Demographic information was entered in step 1 and accounted for 5% of variance of resilience. Sexual orientation was the only demographic variable that significantly predicted resilience ( $p = .025$ ). Hassles related stress and trauma were added in the second step and accounted for an additional 13% of the variance. Self-management and self-reinforcement self-talk were added in the third step and accounted for an increment of less than 1% of the variance in resilience. Neither Self-management self-talk ( $p = .27$ ) nor self-reinforcement self-talk ( $p = .25$ ) were significant predictors of resilience beyond demographics and stress. In the fourth step, autonomous functioning was added and accounted for an additional 13.6% of the variance in resilience. In the final step, interactions between autonomous functioning and self-management self-talk, and autonomous functioning and self-reinforcement self-talk were entered and accounted for less than 1% of the variance in resilience.

In model 5, five of the predictors were significant. As in the earlier models, sexual orientation ( $p = .005$ ), experiences of trauma within last year ( $p = .04$ ), and Daily Hassles stress ( $p = .000$ ) were significant. Self-management self-talk significantly negatively predicted resilience scores,  $\beta = -.164$ ,  $t(177) = -2.00$ ,  $p < .05$ , such that those who reported more frequent use of self-management self-talk had lower resilience scores. Autonomous functioning significantly predicted resilience scores,  $\beta = .378$ ,  $t(177) = 5.17$ ,  $p < .001$ , such that those with higher autonomous functioning scores had higher resilience scores.

### ***Hypothesis 1***

It was hypothesized that more frequent use of positive self-talk would be associated with higher levels of resilience. Neither self-management nor self-reinforcement self-talk were found to be significantly positively associated with resilience. Thus, this hypothesis was not supported.

### ***Hypothesis 2a***

It was hypothesized that autonomy would moderate the relationship between self-management self-talk and resilience, such that when the level of autonomy increases, the relationship between self-management self-talk and resilience also increases. In stage 4 and 5 of the hierarchical regression analysis, after autonomy was added to the regression, self-management self-talk became a statistically significant but negative predictor of resilience. However, autonomy did not moderate the relationship between the two variables (i.e., not a statistically significant interaction). Thus, this hypothesis was not supported.

### ***Hypothesis 2b***

It was hypothesized that autonomy would moderate the relationship between self-reinforcement self-talk and resilience, such that when the level of autonomy increases, the relationship between self-reinforcement self-talk and resilience also increases. In step 5 of the hierarchical regression, the interaction term for autonomy and self-reinforcement self-talk was not found to be significantly related to resilience. Thus, this hypothesis was not supported.

## CHAPTER 5

### DISCUSSION

In this chapter, I discuss the results of my study in relation to previous research findings regarding self-talk, autonomy, and resilience. The practical and research implications are outlined. The limitations of the results and possible future directions are also discussed.

Neither form of self-talk was positively associated with resilience, as had been hypothesized. Furthermore, participants in this study who indicated more frequent use of self-management self-talk statements had lower levels of resilience. This finding runs counter to previous research into the relationship between self-talk and resilience. The current findings may be in part due to the impact of social desirability bias or fear of stigma surrounding talking to oneself. On the STS, items are written in the form, “I talk to myself when...,” which may have been interpreted as speaking to oneself aloud. Duncan and Cheyne (2001) found that their study participants used private speech (audible self-talk) during several tasks, although almost half of the participants later denied use of private speech. The authors suggested that the denial of private speech might be due to stigma surrounding “talking to yourself” or possibly that private speech is such an automatic part of human cognition that it may sometimes go unnoticed by the individual.

Although the participants in the current study did indicate that they used self-talk, none of the types of self-talk were used with great frequency. On the STS, respondents indicate the frequency with which they engage in various forms of self-talk. The most commonly selected response by these participants on almost every item was “sometimes.” For example, on item 12, “I talk to myself when I’m giving myself instructions or directions about what I should do or say,” 62% of participants indicated that they “sometimes” use self-talk and 15% responded that

they never use self-talk in such circumstances. I find these responses odd, in that self-instruction or direction regarding what one should say is inherently a type of self-directed speech, whether audible or internalized. It is unclear how such self-instruction could be accomplished without some degree of internal monologue. As this study relied on the participants' self-reported use of self-talk, it is possible that the results were impacted by the participants' desire to appear socially acceptable or the difficulty of recalling the frequency of self-talk.

Whereas several researchers have established the relationship between self-talk and resilience (e.g., Reyes, 2016; Coulson, 2006; Karoly & Ruchman, 2006), each study involved different measures and differing operational definitions of self-talk and resilience. As mentioned in Chapter 2, the definitions and understanding around self-talk and resilience have shifted over time. This is especially true for the construct of resilience, which has been viewed as a trait, a process, and an outcome after a stressful major life event. In the current study, resilience was defined as the ability to bounce back after a stressor. The current findings may suggest that although there are some aspects, subdomains, or conceptualizations of resilience that are positively associated with self-talk, resilience in response to minor daily stressors is not.

The results of this regression analysis were not consistent with the second hypothesis, that autonomy would moderate the relationship between self-management self-talk, self-reinforcement self-talk, and resilience. In other words, those that use more positive self-talk and have higher levels of autonomous functioning would have higher levels of resilience. In the current study, self-management self-talk was negatively associated with resilience. Self-management self-talk was selected for the study, because it can be conceptualized a positive form of self-regulation. However, it is possible that self-management self-talk might also encompass some forms of rumination or social anxiety-related mental rehearsal. For example,

the self-talk item, “I talk to myself when I need to figure out what I should do or say,” may be endorsed by those that use rehearsal to increase feelings of competence and those that rehearse due to high levels of social anxiety.

Although there was no interaction with self-talk, autonomous functioning was a significant predictor of resilience, such that those with higher levels of autonomous functioning also had higher levels of resilience. Autonomous functioning, or the tendency to take actions based on one’s values, may aid in recovery from a stressor due to the autonomous functioning subdomains of authorship and interest-taking. Authorship is associated with an increased sense of control over one’s choices (Weinstein et al. 2012), which may reduce rumination. Weinstein and colleagues (2012) also reported that authorship and interest-taking were negatively associated with inappropriate guilt. Interest-taking involves self-motivated reflection to develop insight as a means of self-improvement (Weinstein et al. 2012) and may involve a more rationale appraisal of one’s behavior when compared to rumination. In this review of the literature, there was only one previous study in which autonomy was found to be a significant predictor of resilience (Pedro, 2018).

Another finding, which fell outside the a priori hypotheses of this study, was the significant role of stress, daily hassles stress and previous trauma experiences, in predicting resilience for these participants. In the current study, individuals who reported recent traumatic experiences and more severe daily hassles stress also had lower resilience scores. In this study, resilience is broadly conceptualized as the ability to or process of recovering from a stressful or traumatic event, so it follows that people must experience such events to demonstrate resilience. However, there is temporal component to resilience such that those with recent traumatic experiences may still be in the process of recovery and thus may not have fully realized their

resilience. Another consideration is that experiencing daily hassles stress may delay the recovery process due to experiences of chronic stress and having a high allostatic load. Interestingly, daily hassles stress remained a significant predictor of low resilience scores during the final step of the regression, yet experiences of recent trauma were not a significant predictor once autonomy had been entered into the regression equation. This may indicate that chronic stressful events may negatively impact resilience more than episodic stressors, perhaps due to the lack of time for reflection (interest-taking) and recovery inherent in daily stress. Further, in major stressor events (e.g., natural disasters, an assault) people may experience a loss of autonomy as such events are less predictable and more out of their control than daily stressors, thus higher levels of autonomous functioning may counteract or aid in recovery after loss of autonomy.

### **Limitations**

Although the current study contributed to psychology's understanding of resilience and potential predictive factors, there were several limitations. One major limitation of the current study was the use of MTurk to gather the data. The MTurk system draws from a wider pool than the traditional undergraduate convenience sample, allowing for a more representative sample than might otherwise be collected (Arditte et al., 2016). There are benefits to the use of MTurk (e.g., wider reach, quick data collection), yet there are some challenges in collecting accurate data. As with any online survey, there is no way to ensure that participants have completed the survey in a distraction-free environment or have properly attended to the questions. Further, some participants use MTurk as a source of income, which may lead them to rush through surveys in an effort to maximize earning potential. Also, those using MTurk as a source of income may be dealing with more financial stress and insecurity than the average person, skewing the distribution and making generalizations more difficult to support. Cheung and

colleagues (2017) cautioned researchers regarding the potential threat of demand characteristic when sampling from MTurk. Lastly, data from several respondents needed to be removed, as their answers to the open response attention check questions contained seemingly random and unrelated content, which is an indication of a computerized response bot.

Another limitation of the current study is the use of only one measure of resilience. The methods used to measure resilience vary widely across the literature. Further, there is little consensus as to the appropriate definition of resilience, which makes the selection of a single resilience measure difficult. Given that I was interested in examining self-talk as a predictor of resilience in relation to everyday stress, resilience was defined as an outcome or capacity for successful recovery or adaptation in response to a stressor. For this study, I chose to use a single measure in an effort to keep the number of survey items more manageable for study participants and minimize the effect of test fatigue. Even with these considerations a number of participants stated that the survey was too long. It is possible had I chosen to use an additional measure in which resilience was operationalized as a process, that I might have been able to replicate the relationship with self-talk found in previous studies (Reyes, 2016).

Of note, the data for this study was collect between February 22<sup>nd</sup> and March 1<sup>st</sup> 2020, shortly before the onset of the COVID-19 pandemic. Although there were no lockdowns instituted during the time of data collection, travel restrictions were in place for foreign visitors flying from China to the US. None of the participants mentioned COVID-19 or the Corona virus in their free response answers, however, it is possible that some participants were experiencing some degree of anticipatory stress due to the uncertainty of the situation.

### **Implications and Future Directions**

Although the hypotheses of the current study were not supported, the study still produced

significant findings that contribute to the literature. Self-management self-talk, a form of self-regulation, was a negative predictor of resilience. These findings suggest that self-management may not be an effective skill in recovering from a stressor. Post-stressor rumination and rigid self-management may slow the recovery process. In the future, it might be beneficial to examine self-management self-talk in anticipation of, during, and following a stressor task to better determine its function across multiple contexts. For example, in sports psychology self-management is often viewed in the context of practice and competitive play but not in post-game reflection (e.g., Van Raalte et al., 1994; Rotella et al., 1980).

In a counseling context, the finding that self-management self-talk was negatively associated with resilience highlights the need to consider how a client might use a self-regulation skill and if it is possible for the skill to be used in a maladaptive manner. For example, in an acute situation using a distractor might be beneficial but in the context of chronic stress it may lead to avoidance. Similarly, self-management self-talk may be a valuable skill in some contexts, such as in preparation for a stressful event (Van Raalte et al., 1994) but appears to be ineffective in aiding in recovery. Providing context specific skills and psychoeducation regarding skill use in different situations, as is found in Dialectical Behavior Therapy (Linehan, 2014), may be necessary if a counselor decides to offer self-management self-talk as a coping strategy.

Self-reinforcement self-talk, a commonly used coping strategy (Neil et al., 2006), did not predict high levels of resilience. In previous research, positive self-statements were found to be helpful for those with higher self-esteem and harmful to those with low self-esteem due to the tendency for those with lower self-esteem to view the statements as false (Wood, et al., 2009). Taken together, the current findings that self-reinforcement self-talk did not predict resilience may indicate that positive self-talk alone is not sufficient to aid in recovery, as personal

perception of the statements is more impactful than the frequency of their use. Clinically, this highlights the importance of creating positive and realistic statements that the client can fully endorse.

One of the most important findings of the current study is the predictive relationship between autonomy and resilience. Although not generally conceptualized as a skill, autonomous functioning can be developed through social learning, self-reflection, or in the context of autonomy supportive therapy (Ryan et al., 2017). The subdomains of congruence and interest-taking align with fundamental aspects of person-centered therapy and motivational interviewing (Ryan et al., 2017). Further, client rated levels of autonomy support have been associated with positive therapy outcomes (Ryan et al., 2017). The current findings add to the literature and provides support for the use of autonomy development as a component of mental health treatment, specifically in the context of recovery after a stressor.

In future studies, researchers should explore the role of autonomous functioning in the development of resilience. This may be of particular interest for those conducting process research in the field of counseling, as autonomy support on the part of the therapist may aid in the development of autonomous functioning for the client. As this is new area of research, it may be beneficial to draw on existing research in Self-Determination theory (e.g., Ryan & Deci, 2017; Gillison et al., 2008; Patrick & Williams, 2012), which is the theoretical basis of the IAF measure used in the current study, in designing future studies.

Given that self-talk was not found to be a positive predictor of resilience in the current study, future researchers may benefit from replicating the current study with a student population. As past research using student samples has provided support for self-talk as a predictor of resilience (Reyes, 2016; Hames & Joiner, 2012), there may be population

differences between the current sample and student samples. If no differences are found, it may call into question the generalizability of the current study.

In conclusion, this study revealed that self-talk, as least as it was operationalized in this study was not as relevant to resilience as hypothesized. However, autonomous functioning ended up playing a larger role than the hypothesized moderating role in the resilience process. Autonomous functioning was a significant predictor of resilience and accounted for 33.4% of the variability in the regression analysis, which may indicate the importance of autonomy in the development of resilience. The role of autonomy in resilience may be especially salient to experiences of major stressor events (e.g., natural disasters, an assault), as people may experience a loss of autonomy due to the unpredictable and sometimes unavoidable nature of such events. Those with higher levels of autonomous functioning may be better able to manage during stressor events and the reflective nature of interest-taking may aid recovery after the loss of autonomy. Further, the current study provides support for the importance of autonomy development as a component of mental health treatment, specifically in the context of recovery after a stressor.

EXHIBITS

TABLES

**Table 1**

*Summary of Demographic Characteristics for the Study Sample*

Demographic Characteristics		
Gender		
Male	97	54.8%
Female	82	46.33%
Transgender female	1	0.56%
Sexual orientation		
Heterosexual	155	87.57%
Bisexual	16	9.04%
Lesbian	5	2.82%
Gay	2	1.13%
Asexual	1	0.56%
Pansexual	1	0.56%
Ethnicity		
White	116	65.54%
African American/Black	22	12.43%
Hispanic/Latinx	20	35.4%
Asian American	13	7.34%
Native American	6	3.39%
Multi-Ethnic	3	1.69%
Highest level of education		
High school degree	8	4.52%
Some college	27	15.25%
Associate's degree	15	8.47%
Bachelor's degree	111	62.71%
Graduate Degree	19	10.73%
Country of origin		
US	174	98.31%
Cuba	1	0.56%
Eastern Europe	1	0.56%
India	1	0.56%
Kenya	1	0.56%
South Africa	1	0.56%
Malaysia	1	0.56%
US residence	177	
Demographic Characteristics		
MacArthur scale of subjective social status		
Rung #		

1	2	1.13%
2	10	5.65%
3	12	6.78%
4	26	14.69%
5	36	20.34%
6	30	16.95%
7	28	15.82%
8	21	11.86%
9	7	3.95%
10	8	4.52%
Health or mental health hospitalization		
Yes	24	13.56%
No	153	86.44%
History of trauma		
Yes	64	36.16%
No	113	63.84%

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*Note.* N=177. Participants were on average 35.51 years old (SD = 11.03). On the MacArthur Scale of Subjective Social Status, marking a 1 indicates that the individual believes they are at the lowest level of social status, and marking a 10 indicates that the individual believes they are at the highest level of social status.

**Table 2***Means, Standard Deviations, and Reliability Estimates for the Measures*

Scale	Current Study		Normative Data	
	<i>M(SD)</i>	$\alpha$	<i>M(SD)</i>	$\alpha$
DH	56.5(39.5)	.99	37.7(19.8)	.80
STS	50.68 (12.88)	.92	50.47(13.28)	
STS-SM	13.68(3.7)	.83	14.14(3.70)	.79
STS-SR	12.37(3.78)	.82	11.26(4.08)	.89
IAF	3.39(.43)	.60	5.04(1.66)	.82
BRS	3.38(.83)	.84	3.53(.68)	.84

*Note.* DH = Daily Hassles Scale Severity Score, STS = Self-Talk Scale Total Score, STS-SM = Self-Talk Scale Self-Management Subscale Score, STS-SR = Self-Talk Scale Self-Reinforcement Subscale Score, IAF = Index of Autonomous Functioning Total Score, BRS = Brief Resilience Scale Total Score

**Table 3***Descriptive Statics and Correlations among Study Variables*

Variable	1	2	3	4	5
Daily Hassles Stress	-				
Self-Management Self-talk	.22*	-			
Self-Reinforcement Self-talk	.33**	.54**	-		
Autonomous Functioning	.26**	.16*	.07	-	
Resilience	.35**	-.13	-.05	.40**	-

*Note:* \* $p < .05$ , \*\*  $p < .001$

Table 4

*Hierarchical Multiple Regression Analysis Predicting Resilience*

	Variables	B	SE B	$\beta$	$R^2$	$\Delta R^2$	$\Delta F$
Step					.055	.055	1.40
1	Constant	-.512	.347				
	Age	.004	.006	.057			
	Subjective Social Status	.026	.032	.063			
	Gender	-.035	.126	-.021			
	Sexual Orientation	.418	.184	.170*			
	Race	-.092	.135	-.052			
	Education	-.077	.165	-.036			
	Mental Health Crisis	-.261	.176	-.148			
2					.185	.130	13.44***
	Constant	-.291	.348				
	Age	-.001	.006	-.011			
	Subjective Social Status	.019	.031	.047			
	Gender	-.012	.119	-.007			
	Sexual Orientation	.356	.173	.145*			
	Race	-.045	.127	-.026			
	Education	.040	.156	.019			
	Mental Health Crisis	-.081	.170	-.035			
	Trauma	-.275	.136	-.158*			
	Daily Hassles	-.004	.001	-.393***			
3					.193	.008	.83
	Constant	-.248	.350				
	Age	-.001	.006	-.009			
	Subjective Social Status	.016	.032	.038			
	Gender	.021	.122	.012			
	Sexual Orientation	.345	.177	.141			
	Race	-.055	.127	-.031			
	Education	.003	.159	.001			
	Mental Health Crisis	-.078	.170	-.033			
	Trauma	-.273	.137	-.157*			
	Daily Hassles	-.004	.001	-.40***			
	Self-Management Self-Talk	-.022	.018	.060			
	Self-Reinforcement Self-Talk	.023	.020	.105			

4					.329	.136	33.45***
	Constant	-.144	.321				
	Age	-.004	.005	-.058			
	Subjective Social Status	.010	.029	.024			
	Gender	-.065	.113	-.039			
	Sexual Orientation	.471	.163	.192**			
	Race	-.014	.116	-.008			
	Education	-.045	.146	-.021			
	Mental Health Crisis	-.038	.156	-.016			
	Trauma	-.258	.125	-.149*			
	Daily Hassles	-.003	.001	-.279**			
	Self-Management Self-talk	-.038	.018	-.168*			
	Self-Reinforcement Self-talk	.013	.018	.060			
	Autonomous Functioning	.791	.137	.404***			
5					.336	.007	.856
	Constant	-.101	.137				
	Age	-.005	.005	-.061			
	Subjective Social Status	.008	.029	.021			
	Gender	-.076	.113	-.045			
	Sexual Orientation	.464	.164	.189**			
	Race	-.038	.118	-.022			
	Education	-.057	.147	-.027			
	Mental Health Crisis	-.047	.156	-.020			
	Trauma	-.245	.126	-.141*			
	Daily Hassles	-.003	.001	-.285***			
	Self-Management Self-talk	-.037	.019	-.164*			
	Self-Reinforcement Self-talk	.019	.019	.086			
	Autonomous Functioning	.739	.143	.378***			
	SM x AF	.032	.041	.071			
	SR x AF	-.060	.046	-.125			

Note: Sexual Orientation was dummy coded, 0 = LGB+, 1 = Heterosexual  
Moderated Regression Analyses Predicting Resilience from Background Variables, Self-Talk, Autonomous Functioning, and Interactions Between Self-Talk and Autonomous Functioning (N = 177). \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

FIGURES

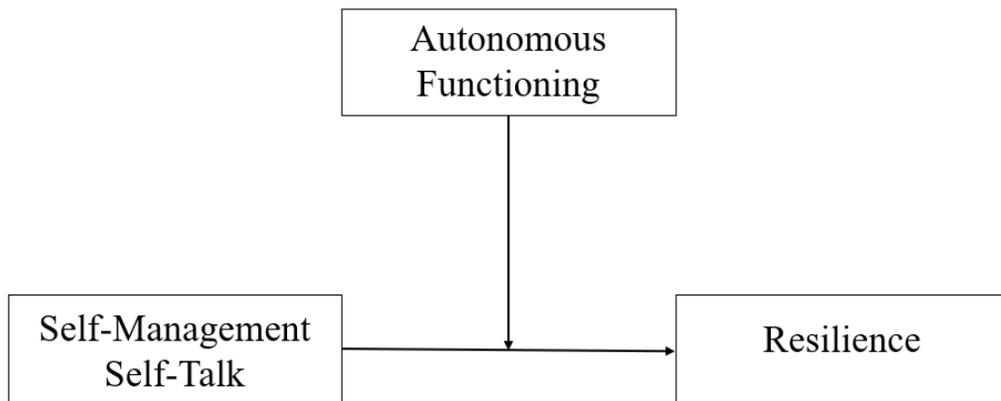


Figure 1

Model of Moderation for Hypothesis 2a

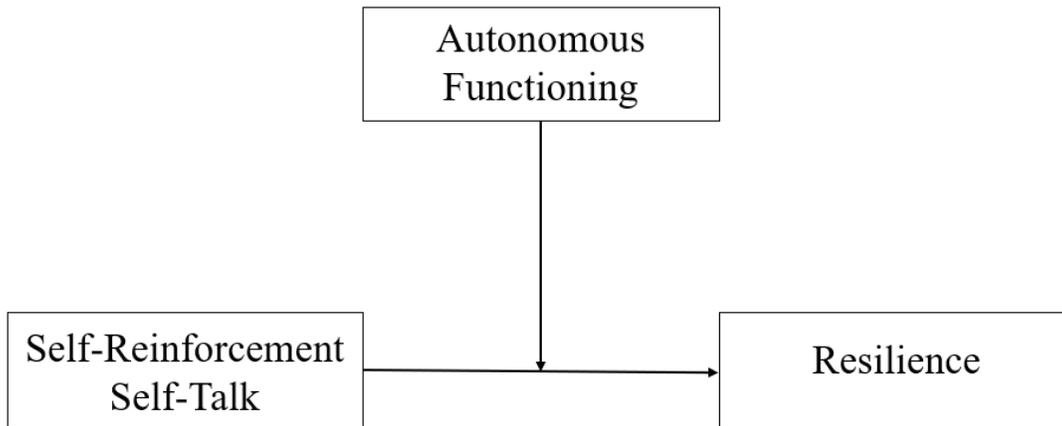


Figure 2

Model of Moderation for Hypothesis 2b

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## APPENDIX A

### DEMOGRAPHIC QUESTIONNAIRE

Directions: Please complete the following information about yourself to the best of your ability.

- 1) What is your age? \_\_\_\_\_
  
- 2) What is your gender identity?
  - a. Female
  - b. Male
  - c. Transgender Male
  - d. Transgender Female
  - d. Non-binary
  - e. Other \_\_\_\_\_
  - f. Prefer not to say
  
- 3) What is your sexual orientation?
  - a. Heterosexual
  - b. Lesbian
  - c. Gay
  - d. Bisexual
  - e. Other \_\_\_\_\_
  - f. Prefer not to say
  
- 4) What is your Race/Ethnicity
  - a. African American/Black
  - b. Native American
  - c. Asian-American
  - d. Pacific Islander
  - e. Hispanic/Latinx
  - f. White
  - g. Middle Eastern
  - h. Multi-Ethnic \_\_\_\_\_
  - i. Other \_\_\_\_\_
  
- 5) What is your country of origin? \_\_\_\_\_
  
- 6) Are you currently living in the United States
  - Yes
  - No
  
- 7) What is the highest level of education you have completed?
  - a. Less than high school degree
  - b. High school degree
  - c. Some college

- d. Associate's degree
- e. Bachelor's degree
- f. Graduate degree

## APPENDIX B

### FREE RESPONSE QUESTIONS

1) Have you had a health or mental health crisis in the last year that resulted in hospitalization?

Yes

No

If so, please describe:

2) Have you experienced any trauma in your life? If yes, please describe briefly:

3) What does autonomy mean to you?

## APPENDIX C

### MACARTHUR SCALE OF SUBJECTIVE SOCIAL STATUS

The following provides an example of the MacArthur Scale of Subjective Social Status. For the complete measure, please refer to the following work:

Adler, N. E., Epel, E. S., Castellazzo, G, Ickovics, J. R. (2000) Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy white women. *Health Psychology*. 19(6):586–592.

**Think of this ladder as representing where people stand in the United States.**

At the **top** of the ladder are the people who are the best off – those who have the most money, the most education and the most respected jobs. At the **bottom** are the people who are the worst off – who have the least money, least education, and the least respected jobs or no job. The higher up you are on this ladder, the closer you are to the people at the very top; the lower you are, the closer you are to the people at the very bottom.

**Where would you place yourself on this ladder?**

Please place a large “X” on the rung where you think you stand at this time in your life, relative to other people in the United States.



APPENDIX D

SELF-TALK SCALE (STS)

16 ITEMS

The following provides an example of the Self-Talk Scale. For the complete measure, please refer to the following work:

Brinthead, T. M., Hein, M. B., & Kramer, T. E. (2009). The self-talk scale: Development, factor analysis, and validation. *Journal of Personality Assessment, 91*(1), 82-92.

Researchers have determined that all people talk to themselves, at least in some situations or under certain circumstances. Each of the following items concerns those times when you might “talk to yourself” or carry on an internal conversation with yourself (either silently or out loud).

Determine how true each item is for you personally by circling the appropriate number next to each item. Assume that each item begins with the statement: “I talk to myself when ...” Be sure to rate each item. Please take your time and think carefully about each item. Use the following scale to rate each item:

1            2            3            4            5  
Never    Seldom    Sometimes    Often    Very Often

**I TALK TO MYSELF WHEN...**

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. I should have done something differently                                    | 1 | 2 | 3 | 4 | 5 |
| 2. Something good has happened to me   | 1 | 2 | 3 | 4 | 5 |
| 3. I need to figure out what I should do or say                                | 1 | 2 | 3 | 4 | 5 |
| 4. I’m imagining how other people respond to things I’ve said                  | 1 | 2 | 3 | 4 | 5 |
| 5. I am really happy for myself  | 1 | 2 | 3 | 4 | 5 |
| 6. I want to analyze something that someone recently said to me                | 1 | 2 | 3 | 4 | 5 |
| 12. I’m giving myself instructions or directions about what I should do or say | 1 | 2 | 3 | 4 | 5 |

APPENDIX E

THE BRIEF RESILIENCE SCALE (BRS)

6 ITEMS

The following provides an example of the Brief Resilience Scale. For the complete measure, please refer to the following work:

Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: assessing the ability to bounce back. *International journal of behavioral medicine, 15*(3), 194-200.

Instructions: Use the following scale and circle one number for each statement to indicate how much you disagree or agree with each of the statements.

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

- 
1. I tend to bounce back quickly after hard times..... 1 2 3 4 5
  2. I have a hard time making it through stressful events..... 1 2 3 4 5
  3. It does not take me long to recover from a stressful event..... 1 2 3 4 5

APPENDIX F

INDEX OF AUTONOMOUS FUNCTIONING (IAF)

15 ITEMS

The following provides an example of the Index of Autonomous Functioning. For the complete measure, please refer to the following work:

Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2012). The index of autonomous functioning: Development of a scale of human autonomy. *Journal of Research in Personality, 46*, 397-413.

Instructions: Below is a collection of statements about your general experiences. Please indicate how true each statement is of your experiences on the whole. Remember that there are no right or wrong answers. Please answer according to what really reflects your experience rather than what you think your experience should be.

Items are usually paired with a Likert-type scale:

1	2	3	4	5
“not at all true”	“a bit true”	“somewhat true”	“mostly true”	“completely true.”
1. My decisions represent my most important values and feelings.				1 2 3 4 5
2. I do things in order to avoid feeling badly about myself.				1 2 3 4 5
3. I often reflect on why I react the way I do.				1 2 3 4 5
4. I strongly identify with the things that I do.				1 2 3 4 5
5. I am deeply curious when I react with fear or anxiety to events in my life.				1 2 3 4 5

APPENDIX G

THE DAILY HASSLES SCALE

117 ITEMS

The following provides an example of the Daily Hassles Scale. For the complete measure, please refer to the following work:

Kanner, A. D., Coyne, J. C., Schaefer, C., & Lazarus, R. S. (1981). Comparison of two modes of stress measurement: Daily hassles and uplifts versus major life events. *Journal of behavioral medicine*, 4(1), 1-39.

Directions: Hassles are irritants that can range from minor annoyances to fairly major pressures, problems, or difficulties. They can occur few or many times.

Listed in the center of the following pages are a number of ways in which a person can feel hassled. First, circle the hassles that have happened to you in the past month. Then look at the numbers on the right of the items you circled. Indicate by circling a 1, 2, or 3 how SEVERE each of the circled hassles has been for you in the past month. If a hassle did not occur in the last month do NOT circle it.

.....

HASSLES

SEVERITY

- 1. Somewhat Severe
- 2. Moderately Severe
- 3. Extremely Severe

(1) Misplacing or losing things .....	1	2	3
(2) Troublesome neighbors .....	1	2	3
(3) Social obligations .....	1	2	3
(4) Inconsiderate smokers .....	1	2	3

(5) Troubling thoughts about your future .....	1	2	3
(6) Thoughts about death .....	1	2	3
(7) Health of a family member .....	1	2	3
(8) Not enough money for clothing .....	1	2	3
(9) Not enough money for housing .....	1	2	3
(10) Concerns about owing money .....	1	2	3

## APPENDIX H

### INFORMED CONSENT AGREEMENT

**My name is Ian Mosier. I am a graduate student at Southern Illinois University-Carbondale, and I am asking you to participate in my research study. Please read this consent agreement carefully before you decide to agree to participate in the study.**

The purpose of this study is to examine the relationship between self-talk, autonomy, and resilience. This study is intended to fulfill my thesis requirement and may be published in the future. **You are eligible to participate in this study if you are 18 years or older, reside in the United States of America, and if English is your primary language.**

You will be participating in this study through the online service Amazon Mechanical Turk, commonly known as MTurk. You will be asked to complete a survey based on your personal experiences and beliefs. **To protect your privacy and that of other people, please do not use anyone's names while answering the survey questions.** Participation is voluntary, and you will be able to stop at any point during the survey. If you want to withdraw from the study, simply close the survey browser tab. There is no penalty for withdrawing. **You may skip any questions that you do not want to answer.** This study is estimated to take approximately 30 minutes. This study is expected to cause you only minimal distress. There are no direct benefits to you for participating in this research study.

The study data will be stored on the MTurk system, as well as, on a password protected laptop. The information that you give in the study will be handled confidentially. Your data will be anonymous which means that your name will not be collected or linked to the data. Because of the nature of the data, it may be possible to deduce your identity; however, there will be no attempt to do so and your data will be reported in a way that will not identify you. Only those directly involved in the project will have access to the responses. This study will be presented as part of my thesis process and possibly at future professional conferences. While the results of this study may be published, such a publication would not contain any identifying data.

**Payment:** Eligible study participants will be compensated \$0.50 after successful completion of the survey. Your responses must be thoughtful and honest, so people that respond randomly or carelessly may not be compensated.

**If you have questions about the study, please contact me or my advisor:**

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**Agreement:**

I agree to participate in the research study described above.

By clicking the Arrow button, you are indicating that you are voluntarily consenting to participate in the study.

**This project has been reviewed and approved by the SIUC Human Subjects Committee. Questions concerning your rights as a participant in this research may be addressed to the committee chairperson, Office of Research Compliance, SIUC, Carbondale, IL 62901-4344. Phone (618)-453-4533. E-mail: [siuhsc@siu.edu](mailto:siuhsc@siu.edu)**

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Thesis Paper Title:

Coaching Yourself Through: Exploring the Relationship Between Positive Self-Talk and  
Resilience

Major Professors: Tawanda M. Greer-Medley, PhD and Kathleen Chwalisz, PhD