Role of Cognitive Shift in Resilient Adaptation to Difficult Events

by

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ABSTRACT

Sometimes difficult life events challenge our existing resources in such a way that routinized responses are inadequate to handle the challenge. Some individuals will persist in habitual, automatic behavior, regardless of environmental cues that indicate a mismatch between coping strategy and the demands of the stressor. Other individuals will marshal adaptive resources to construct new courses of action and reconceptualize the problem, associated goals and/or values. A mixed methods approach was used to describe and operationalize cognitive shift, a relatively unexplored construct in existing literature. The study was conducted using secondary data from a parent multi-year cross-sectional study of resilience with eight hundred mid-aged adults from the Phoenix metro area. Semi-structured telephone interviews were analyzed using a purposive sample (n=136) chosen by type of life event. Participants' beliefs, assumptions, and experiences were examined to understand how they shaped adaptation to adversity. An adaptive mechanism, "cognitive shift," was theorized as the transition from automatic coping to effortful cognitive processes aimed at novel resolution of issues. Aims included understanding when and how cognitive shift emerges and manifests. Cognitive shift was scored as a binary variable and triangulated through correlational and logistic regression analyses. Interaction effects revealed that positive personality attributes influence cognitive shift most when people suffered early adversity. This finding indicates that a certain complexity, self-awareness and flexibility of mind may lead to a greater capacity to find meaning in adversity. This work bridges an acknowledged gap in literature and provides new insights into resilience.

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INTRODUCTION

Difficult events are essentially problems to be solved. This simple statement belies the complex web of interacting event characteristics, individual differences, human cognitive processes and resources brought to bear in resolving the issues that arise as one attempts to cope with difficult events. A body of literature has emerged from cognitive, neuroscience and humanistic influences with the goal of understanding problem solving as the aggregate processes of the human mind from the moment a problem emerges into consciousness to the moment an individual enacts a resolution (see, for e.g., Anderson, 1993; Ash, Jee, & Wiley, 2012; Schulz & Heckhausen, 1996). Literature influenced by resilience seeks to identify variables that influence the operation of an individual's mind as it engages in the problem solving process, though the vernacular describes resilience in terms of personality, individual differences, positive outcomes and coping processes that promote well-being (see, for e.g., Boerner & Jopp, 2010; Bolger & Schilling, 1991; Cantor, 1990). Inherent in much literature from psychological research is the desire to translate accumulated knowledge into real world interventions, ranging from those that may occur between therapist and client (e.g., Babb, Levine, & Arseneault, 2010) to interventions for coping with disease or prevention (e.g., Zautra, Fasman, Davis, & Craig, 2010).

Insight and positive psychology coping literature rarely reference one another in part because of differing ontological and epistemological perspectives (Waterman, 2013). For this reason, integrating the literature requires the challenging work of laying bare

differing labels for similar constructs across literature and of integrating scientific work across potentially differing philosophical foundations and research methods (Waterman, 2013). A common stumbling block across fields is how to recognize and assist one's transition away from unhelpful conceptualizations of problems and ways of coping towards more helpful ones (Dominowski & Buyer, 2000; Dominowski, 1981). Though processes have been proposed for antecedents and outcomes of a transition to more helpful modes of coping - this *cognitive shift* – has not yet been described and operationalized in extant literature, though the gap has been acknowledged (Schulz & Heckhausen, 1996).

A study was conducted using mixed methods analysis of transcripts of semi-structured interviews about difficult life events to better understand and operationalize what it means to cognitively shift, and to validate the meaning of the construct against better understood constructs and outcomes. An Actor-Stressor Response Framework represent and integration of current scientific understanding of problem solving, human development, coping, and judgment into the conceptualization of the role cognitive shift plays in the flow of information processing that a person engages in while coping with difficult events. The Actor-Stressor Response Framework therefore serves the unique function of guiding a review and integration of literature across psychological disciplines while explaining how and where cognitive shift falls in the conceptual landscape.

Overview

It is an unfortunate truth that in the face of difficult events, some individuals never recover, barely recover, or just manage to return to homeostasis (Zautra, Arewasikporn, & Davis, 2010; Zautra, 2009). Others find benefit in the challenges presented by the difficult event, and in doing so experience a sense of personal growth out of adversity (Updegraff & Taylor, 2000; Zautra, Arewasikporn, et al., 2010). Genes, environment and dispositional traits are among the factors that appear to play a role in individual resilience. Among the complexities of this line of research is that these factors interact with one another and manifest different levels of intensity based on perception of circumstances (e.g., whether the event corresponds closely to an important goal or triggers past trauma).

It has often been noted that, in addition to such factors as dispositional traits, there are difficult events of such magnitude and/or unfamiliarity that they fall outside of any reference point provided by an individual's prior experience (Boerner & Jopp, 2010). An individual experiencing such an event may find it difficult to determine appropriate ways of coping with the circumstances and feelings surrounding the event (Boerner & Jopp, 2010; Zautra, 2009). This person may attempt to use a one-to-one mapping rationale that matches the actor's perception of the event to prior successful ways of coping with similar experiences (Bandura, 1989). Despite evidence that issues are not resolving as predicted, the actor may fixate on this path and continue until personal resources are depleted (Brandtstädter, 2009; Schulz &Heckhausen, 1996). Another person may engage

in a random adoption of resources to cope with the perceived stressor without ever stepping back from the situation and reconsidering the best approach (Ash et al., 2012). In all, issues may be seemingly irresolvable with one's existing conceptualization of the event and personal resources. Issues may be compounded where the individual perceives the event as a threat to self-identity or important goals (Updegraff & Taylor, 2000).

Some individuals may experience a transformative cognitive moment that may occur when a problem is of sufficient complexity and unfamiliarity to the individual that existing personal resources cannot adequately address it. While existing literature describes processes by which individuals may differentially engage modes of coping (Brandtstädter, 2009; Lövdén, Bäckman, Lindenberger, Schaefer, & Schmiedek, 2010; Schulz & Heckhausen, 1996), there is an absence of work to describe or operationalize the cognitive shift that marks the release from a current coping mode and conscious engagement of another (for call to future researchers to study transition from selective primary control to compensatory secondary control, see Schulz & Heckhausen, 1996).

The clearest discussion of mechanisms that lead to cognitive shift may be found in the developmental research field, owing much to the pioneering work by Piaget on development of cognition in the brain and distinguishing development from learning (Piaget, 2003). Following this line of research, developmental psychologists Schulz and Heckhausen describe the mismatch between one's goals and resources over an extended period as signaling to a person that assimilative modes of coping are not appropriate for the problem (1996). Schulz and Heckhausen go so far as to ponder the utility of

accelerating the discrepancy and severity of mismatch between goals and resources for accomplishing the goals in order to assist the actor in disengagement of nonproductive activities (Schulz & Heckhausen, 1996). Where repeated failure to achieve goals resulting from mismatch hastens one towards cognitive shift, the shift itself is conceptualized as the transition point in which the actor experiences openness – however subtle - to novel solutions and thereby triggers engagement of the conscious centers of the brain responsible for analytical and creative activity. One's level of cognition at the cognitive shift may be quite weak, such as the general feeling that one is without means to resolve issues, but the key is that the solver must be willing to take a broader focus that utilizes seemingly unrelated information and switches unconscious, i.e. automated and associational, problem solving from dominant processing centers of the brain to inclusion of those involved in conscious, effortful and creative processing (Bowden, Jung-Beeman, Fleck, & Kounios, 2005; Kahneman, 2011). However strong the moment of cognitive shift, it is this transition that is required in order to engage the cognitive restructuring required to find a novel resolution (Ash et al., 2012; Dominowski & Buyer, 2000). Bandura alluded to this when he wrote that "if routinized behavior fails to produce expected results, the cognitive control system again comes into play," (1989, p. 1181). This may involve reconfiguration of one's conceptualization of the problem and its impacts, reprioritization of existing goals or values, and/ or alternate engagement of resources in order to find a novel resolution(e.g., see Ash et al., 2012).

There are a number of cognitive paradigms that have been used to illustrate the domains associated with unconscious and conscious mental processing of information (e.g., Goleman & Davidson, 1979; Ledoux, 1998; Marcel, 1983). Noted for his contributions to behavioral decision theory, Kahneman has presented a representative paradigm for explaining the provinces of unconscious and conscious processing with constructs he labeled as "System 1" and "System 2" (Kahneman, 2011). Kahneman relates the two systems, which he presents as metaphorical agents of the mind, to how one tends to think, judge and choose (Kahneman, 2011, pg. 13). System 1 relates to unconscious processing that often manifests as intuitive or automatic thinking (Kahneman, 2011). The correlates to System 1 are found in the literature on associative thinking, which means that when an event occurs that provides the opportunity to form an opinion and formulate a plan of action or avoidance, one tends to relate the event automatically to prior experience and to act similarly to ways one has in the past; Kahneman notes that the brain will even tend to follow prior unsuccessful actions rather than seek and incorporate new information and new actions (Kahneman, 2011). In this vein, Kahneman describes initial attempts at interpreting and resolving situations the operation of System 1, which tends to be biased towards belief in the presently chosen alternative and forgetful of discarded alternatives (Kahneman, 2011, pg. 80). Designed as an efficient system, the unconscious System 1 has many characteristics that explain how people can become stuck in dysfunctional modes of coping despite external indicators that they are not working as desired. In addition to those characteristics noted

above, System 1 suppresses doubt, generates theories of causation that it is biased to believe, is overly optimistic about the probability of success, narrowly conceives problems in isolation of each other, and feels more cognitive ease when vigilance is reduced (Kahneman, 2011, pg. 105).

Kahneman alternatively calls System 2 the "effortful system" and "lazy controller" in reference to research indicating that while System 1 is monitored by System 2 (for example, running through scenarios of consequences if various previously attempted actions are taken), the self-control and cognitive effort required to operate System 2 are substantial and exhausting mental work such that excessive attention to one area will likely cause System 2 to neglect other areas (termed *ego depletion*) (Kahneman, 2011). In order to increase efficiency, the mind finds ways to bypass excessive cognitive effort by using not only associational learning but also judgment heuristics (Kahneman, 2011).

Kahneman defines a *heuristic* as "a simple procedure that helps find adequate, though often imperfect, answers to difficult questions," (Kahneman, 2011, pg. 99). Heuristics, as described, are imprecise shortcuts that may result in an adequate resolution with some measure of cognitive ease. For example, humans actively categorize other people, groups and past experiences for easy System 1 reference, even though in practical terms such shortcuts tend to introduce bias and flawed judgments (Kahneman, 2011). As applied to a person experiencing distressful events, there would already be significant cognitive effort applied from the stress of the event itself. If novel solutions are required

for a positive resolution, focusing System 2 towards working out a previously untried conceptualization of the problem in its solution may require more self-control than a distressed person has at their disposal. Such a person may operate from within System 1, i.e. use associational learning processes, until either forced by circumstances or cognitively ready to engage in the consciously-derived cognitive shift towards insight learning processes.

Though they remain somewhat controversial within the scientific community, neuroimaging studies provide concomitant evidence that cognitive shift is a distinct switch that may be recognized by an individual trying to solve a problem or by third parties observing the individual (Ash et al., 2012; Bowden et al., 2005). In recent neuroimaging studies seeking to understand how the brain processes during insight problem solving, there is physical evidence of that some switchover of information processing in the hemispheres of the brain occurs prior to insight (Bowden et al., 2005). In essence, Bowden and colleagues studied how cognitive shift may present when applied to small, discrete problem events such as word problems (Bowden et al., 2005). Using fMRI, the researchers found that while the brain is attempting to use strategies based on prior experiences the left hemisphere of the brain dominates, yet the right hemisphere presented increased signal when insight was reported (Bowden et al., 2005). Further, scalp EEG recordings in the same region showed gamma-band spikes just prior to reported insight and a sudden increase in alpha-band frequency over the right visual cortex (suggestive of a decrease in neural activity) 1.5 seconds prior to an insight

becoming clear and capable of being verbalized (Bowden et al., 2005). These findings may support the notion that very different types of processing are used in associational and insight learning, and provide support for a measurable switch (as from cognitive shift) from one type of processing to another.

Ash, Jee and Wiley conducted a problem solving study that required participants to verbalize thoughts as they attempted to solve problems, finding that some participants reached an impasse that usually preceded insight problem solving (Ash et al., 2012). They reported that in the moments of switching from associational solving to novel resolution processes the participants verbalized not knowing what to do, being lost or stuck, and demonstrated silence and lack of overt problem solving behaviors (Ash et al., 2012). Their impasse operationalization bears similarity to the estimated functioning of the cognitive shift, though it lacks openness to novel resolution features characterized by the cognitive shift construct. This characteristic is important given that an impasse, as described in Gestalt literature, may not necessarily lead to insight but may instead result in continued fixation on a predetermined path, a partial resolution or no resolution and resultant avoidance (Jones, 2003). An impasse, which Ash et al described as the experience of being stuck, resembles the Schulz and Heckhausen concept of mismatch between resources and environment in that both represent a signal to the actor that current problem solving strategies are not working (Schulz &Heckhausen, 1996). Both impasse and mismatch are concepts that have negative valence insofar as they describe being stuck, unsure, inadequate resources, and being far from one's goals. Neither impasse nor

mismatch inevitably lead to engagement of conscious effort and creative thinking processes. A cognitive shift, on the other hand, marks the interaction of some level of cognition that goals are not being met by current approaches and a willingness to engage effortful, open-ended mental processes to discover a new path. The cognitive shift therefore has positive valence and transitions one directly into the processes needed to derive insight into a situation. Research, included that proposed here, may discover that individual differences such as openness to experience and trait hope (combined agency and flexibility) are the factors that interact with cognition to generate cognitive shift. It is further theorized that, depending on one's self-awareness, the cognitive shift itself provides novel information (e.g., "this way of coping is not moving me towards my goal") that is processed for future access, and therefore that by entering cognitive shift one already has preliminary insights (Bowden et al., 2005).

Insight, as the culmination of cognitive restructuring, is ably captured in humanistic literature (e.g., Ash et al., 2012; Bowden et al., 2005) that differentiates insight learning from associational learning. Associational learning is embodied when a person learns to connect a resource, such as algebra, with problems, such as equations with a letter standing in for a number (Ash et al., 2012). The same principle can be applied to events that create issues to be resolved. If prior similar events were ably resolved using a certain coping style, then an individual is likely to attempt to handle a situation with the same style that was previously useful (Kahneman, 2011). Insight learning, on the other hand, occurs when an individual is not automatically equipped

through past experience with the necessary resources to resolve a perceived issue and must find new and novel approaches for a desirable resolution to occur. The prerequisite for the novel solution, or insight, is a cognitive restructuring (Ash et al., 2012) that itself must logically be catalyzed by a transition (i.e., cognitive shift) into an attitude of openness for a more novel and creative resolution.

While the culmination of the cognitive restructuring begun by the cognitive shift may be referred to as "insight," it should be noted that it is distinguished from the Gestalt notion of the aha! moment (see Dominowski, 1981), which may not necessarily occur simultaneously with the understanding that comes out of the cognitive restructuring process. Though debated among insight researchers, there is inconclusive evidence that the subjective aha! moment is experienced uniformly even though there is evidence of processes that engage creativity to find unusual solutions to problems (Dominowski, 1981). In their neuroimaging studies, Bowden and colleagues found evidence in scalp EEG readings of a dip in mental processes immediately prior to a solution coming to conscious mind; it was speculated that this may explain the subjective sense of aha! that people have when an answer seemingly comes from nowhere (Bowden et al., 2005). While this is a fascinating finding, the existence or nonexistence of the aha! experience is nonessential to explain the novel resolutions that emerge from cognitive restructuring, which is also referred to in the problem solving literature as the insight learning process (Ash, Cushen, & Wiley, 2009; Ash et al., 2012; Dominowski, 1981).

The aggregate set of processes described in the preceding paragraphs is captured in Figure 1, depicting an Actor-Stressor Response Conceptual Framework. The conceptual framework incorporates the psychological research discussed herein and identifies where and how the cognitive shift adds value to the scholarly discussion.

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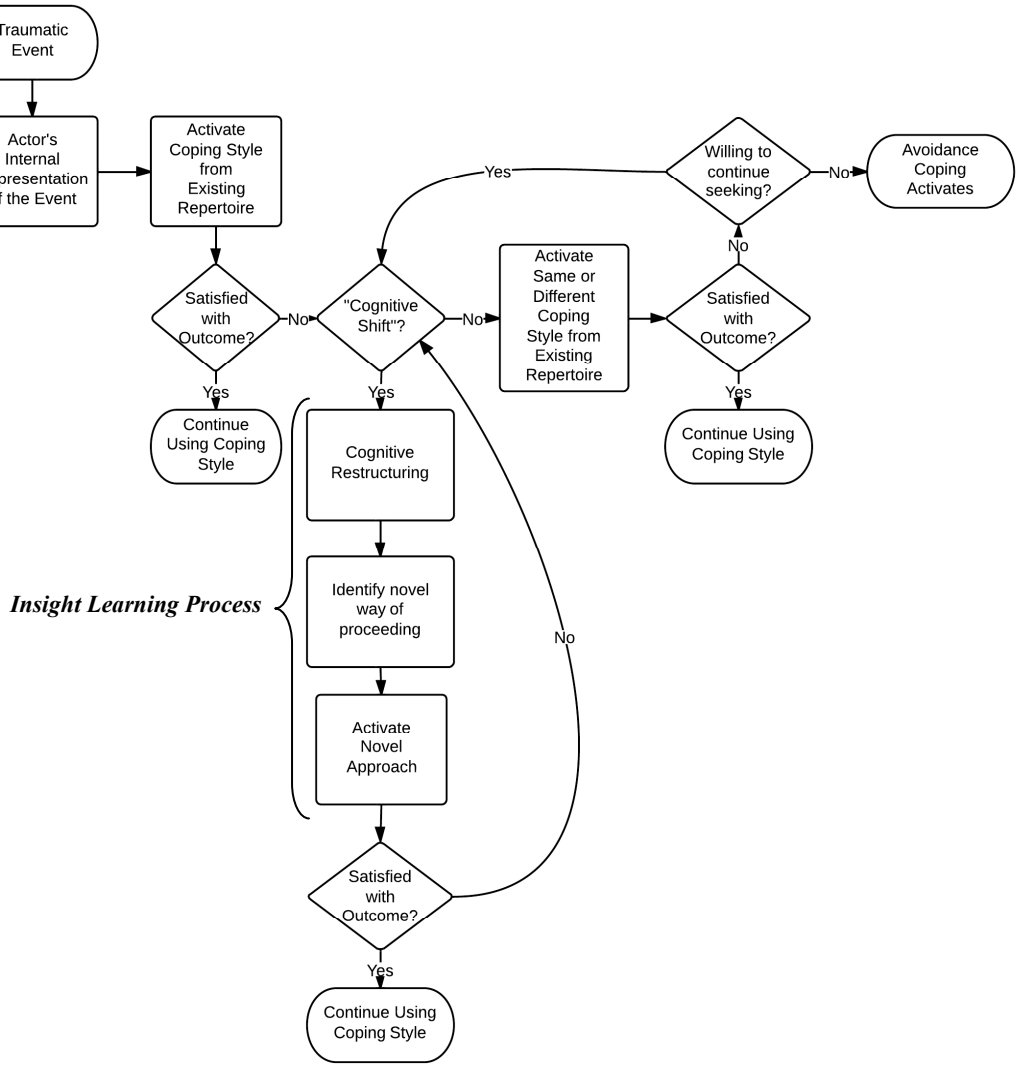
Figure 1.

Actor-Stressor Response Framework



The study on cognitive shift addressed four initial hypotheses. The first hypothesis was that cognitive shift is a distinct construct that can be identified, described, and coded for statistical analysis through a mixed methods analysis of narratives of recovery from difficult events. Second, it was hypothesized that dispositional traits such

as hope, conscientiousness, negative reactivity and openness would predict the likelihood of cognitive shift in finding a resolution of difficult events. Though the traits are considered dispositional, their intensity was expected to fluctuate from situation to situation. Based on accumulated scientific evidence, it was believed that trait hope, conscientiousness, and openness would positively predict cognitive shift. Negative reactivity was expected to negatively predict cognitive shift. The third hypothesis was that cognitive shift would positively predict greater satisfaction with one's own handling of issues arising from difficult events. A number of additional hypotheses were tested, based on the qualitative analysis. It was hypothesized that cognitive shift would predict recovery, belief in future coping efficacy, and the perceived helpfulness of one's social circle during trying times. The fourth hypothesis represents a validation of the cognitive shift construct through correlational analysis of participant perception of post-event growth with cognitive shift. A regression analysis of cognitive shift predicting growth was also performed.

The data for this study came from a parent study of resilience using a nonclinical sample of 800 participants aged 40 -65 years in Maricopa County, Arizona. A subsample of 738 participants agreed to be recorded in semi-structured interviews as they retrospectively described the most difficult event in their lives, the methods they used to cope, and how well they recovered. In 2010, the semi-structured interview was amended to add questions related to whether the interviewees perceived themselves as having grown from the difficult life event; 429 recordings include the growth questions. Audio

recordings were transcribed and cleaned by research assistants according to the Transcription Protocol in Appendix 1. Participants were primed during the structured interview to consider traumatic events that had previously happened by answering questions from the Traumatic Stress Schedule (TSS) and PERI Life Events (PERI); nonetheless, participants chose the events that they wished to discuss in their narratives.

The first hypothesis was studied by taking a global, retrospective approach to examining participants' accounts of difficult events and their personal analyses of how they were affected by, coped with, recovered, and whether they experienced growth from their difficult events. The analytic approach consisted of creation of a qualitative codebook consisting of initial codes chosen based on existing literature and preliminary interview data. Core codes were developed as central constructs to which all other codes are related. The transcripts of the recorded interviews were open-coded using a grounded theory approach by identifying within the transcripts those descriptive words or phrases that capture the meaning of cognitive shift (Glaser & Strauss, 1967). Once "theoretical saturation" occurred (the point at which each transcript elicits less and less unique information (see Glaser & Strauss, 1967), existing literature was again consulted to help refine the cognitive shift construct into its final form. One hundred and thirty-six transcripts consisting of death, illness, abuse, and substance use-related events were coded in order to fully develop the cognitive shift construct.

The cognitive shift construct had to be preliminarily conceptualized using existing literature; the initial operationalization of cognitive shift is presented in Table 1, which

represents the codes in the first version of the scoring sheet used for the qualitative analysis. The interview data was expected to fill the literature gap by providing aspects of individual reasoned action, motivations and required to mobilize a cognitive shift. It was believed that System 2 must be engaged for a cognitive shift to occur.

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Table 1.

Codes from initial theoretical codebook.

AWARENESS – Conscious engagement with unpredictable or difficult event & feelings
PERSPECTIVE CHANGE – Behavior or thought (may be opinion or judgment) change described in relation to consciously wrestling with situation; detecting one's own perceptual errors
GOAL-COPING MISMATCH – New coping adopted after failed coping attempts; alternatively, new goals may be adopted
RECONCILIATION – Making meaning of situation & its aspects, reframing event, benefit finding; redefinition of event "boundaries"
BROADENING APPRAISAL – Looking at situation (values, goals, coping options, event) with a wider lens; seeing more options for handling/ coping than previously seen
LIFE DISRUPTION – Difficulty orienting to situation; strong emotional response; complex choices
EMOTIONAL COMPLEXITY – Ably adjusts coping depending on demands of situation; emotional valence & situation match
REORIENTATION – Change in locus of attention; may be transition from exploratory/ uncertain state to task or goal-oriented state
ATTENTIONAL DISENGAGEMENT – ceasing previous activities, or devoting less time to them
REDIRECTION OF ATTENTION – shifting focus to new goals, motivations, coping, priorities, or new mindsets

Models of problem solving have been proposed that incorporate traditional economic notions of supply and demand as well as more traditional problem-solving notions of resources and stressors (Brandtstädter, 2009; Lövdén et al., 2010). A common thread in these models is that at some point a person may recognize that resources will

become increasingly depleted if the current path is pursued (Brandtstädter, 2009). Some have hypothesized that this point of mismatch may ultimately produce a change of strategy (Dominowski, 1981). Others believe that repeated failure alone may produce a change in strategy (Dominowski, 1981). Still others have hypothesized that giving hints will catalyze not only problem-solving but retention of novel information (Ash et al., 2009; Dominowski & Buyer, 2000). Evidence has accumulated in the problem solving literature that none of these hypotheses is sufficient to explain how change occurs and what it looks like when a person enters the state of readiness to change (Ash et al., 2009, 2012; Dominowski, 1981; Schulz & Heckhausen, 1996). Cognitive shift is part of a larger set of cognitive processes that must themselves be disentangled from one's understanding of the nature of events themselves. The sections to follow will trace salient existing literature on events, cognition, individual differences, and the use of mixed methods to analyze cognitive shift.

Disentangling Events and Perceptions

Humanity has a long history of grappling with suffering by trying to understand and focus on those factors within its power to control, such as perception, and those factors that are not so easily within its power to control, such as the actions of others, death and other external occurrences. As Marcus Aurelius Antoninus reasoned in his *Meditations* circa 176_{BC}, "If you are pained by any external thing, it is not the thing that disturbs you, but your own judgment about it" (Aurelius, 1997, p. 63). He asserted that it was the meaning ascribed to an event, and not the event itself, that caused pain; further,

that adjusting the meaning and feelings that sprung from the meaning was within the power of a person (Aurelius, 1997).

Research that involves stress, trauma and crises has tended to intermingle terms and definitions; for example, of trauma conceived as an event, a perception, and even the process that links the event and perception (Dulmus & Hilarski, 2003). This can create the appearance of circular reasoning and thereby diminish the translational utility of trauma literature (Dulmus & Hilarski, 2003). In order to avoid contributing to scholarly confusion, some care will be taken here to provide working definitions of concepts relevant to this proposal. For example, a *difficult event* will describe any environmental stimulus perceived by the actor as negatively impacting the actor's goals, values and/or resources. Put simply, a difficult event is a problem to be solved. The environment stimulus is characteristically external to the actor, and difficulty refers to how the actor appraises and reacts to the stimuli. Notably, environment has no impact qualities until so appraised by the actor. This underscores the idea that an event or circumstance is not inherently stressful or traumatic, but is perceived and characterized thus by the actor (Dulmus & Hilarski, 2003). This is an important distinction because it extricates the emotional undercurrent and cognitive interpretation from the facts of the event.

It follows that a discrete event experienced by two different individuals may be perceived by one person as stressful and by the other as traumatizing. Prior perception research has found that individuals are heterogeneous in their perceptions of events (Dulmus & Hilarski, 2003). Lazarus defined "stress" as a "particular relationship

between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering well-being" (1984, p. 376), with perceptions of stress falling along a continuum ranging from not stressful to crisis (Dulmus & Hilarski, 2003). Difficult events are inherently stressful, but the degree of stress will be variable among individuals.

While the model suggested by the definition of *difficult event* has broad application, the proposed study will focus narrowly on events perceived by each individual to be one of the most stressful occurrences over the course of their lives. Differences in an individual's resources - history, culture, personality, social support and other resilience-related variables (e.g., agency) - will determine whether the event described was perceived as stressful or traumatic, even creating a crisis (Dulmus &Hilarski, 2003). Accordingly, an event appraised negatively may be perceived as highly stressful or traumatic, and the individual may feel overwhelmed in attempting to cope. An event appraised as positive may receive a positive reaction, and the actor may be able to cope efficiently (Dulmus & Hilarski, 2003) and even choose to act to maintain the situation (Turner, Goodin, & Lokey, 2012).

Resources Matter

An actor's *resources* refers to any combination of history, culture, stage of development, disposition (e.g., personality, agency, optimism), social support, coping repertoire, values, goals, motivations, and other qualities that individuals embody and/ or mobilize in the attempt to resolve issues (e.g., Bandura, 1982; Boerner & Jopp, 2010;

Cantor, 1990). Some of these resources, such as social support, stage of development, history and culture, are nominally external to the individual but nonetheless shape an individual's self-concept and world view (Updegraff & Taylor, 2000; Kahneman, 2011).

Individual differences is a term that describes a broad swath of research into individual attributes such as demographics, personality, intelligence, motivation, values and interests, self-concept, self-efficacy and many other domains as they relate to the individual person (e.g., Allen & Lauterbach, 2007; Bandura, 1982; Bolger & Schilling, 1991; Turner et al., 2012). Individual differences may best be understood as they relate to life stressors experienced and the resources required by individuals who possess the attributes (e.g., Aidman & Kollaras-Mitsinikos, 2006; Allen & Lauterbach, 2007). For example, depending on the stressor and the resources required in order to effectively cope with the stressor, an individual's age may give rise to vulnerability or protection. Similarly, one's disposition towards a certain way of seeing and interacting with the world may largely predict whether and to what extent one perceives an event as stressful. Dispositional traits also play a role in explaining the coping resources one employs and even long-term outcomes, such as development of psychopathology (Aidman & Kollaras-Mitsinikos, 2006) or a sense of greater well-being and personal growth (Zautra, Arewasikporn, et al., 2010). The proposed research would begin a line of inquiry into how individual differences may assist or hinder one's ability to engage cognitive shift, which follows up work by Lovden and others to understand the role of mismatch and

individual differences in predicting switchover to accommodative modes of coping (Lövdén et al., 2010).

Models for Coping with Difficult Events

Any integrated theory of how an actor goes about addressing issues arising from difficult events owes a debt to the researchers who have tackled the problem in the past. Given that the origin for cognitive shift was grounded in narratives of recovery from difficult life events and has been refined to its current form through examination of extant literature, it should be noted that in no theoretical framework examined was an explication of cognitive shift found. The word appears in an article by Barbara Fredrickson and colleagues, described as a transition that needs more research in order to understand its nature (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008). Most often, as will be shown below, researchers limited their process framework to what happens prior to restructuring or what happens during and after restructuring (e.g., Ash et al., 2009; Brandtstädter, 2009). The theories described in this section range in their foci, which include coping modes as influenced by goal pursuit and adjustment, appraisal processes as influenced by personal meaning, cognitive plasticity and flexibility in a transactional approach, and insight learning processes (Ash et al., 2012; Brandtstädter, 2009; Dominowski, 1981; Jopp & Schmitt, 2010; Lövdén et al., 2010; Sweeny, 2008; Turner et al., 2012). Fields of study that produced the theories also have wide range and the theories have therefore been validated through differing methodologies, including lab experiments, naturalistic observation, narrative and mixed methods analysis,

neuroimaging, and studies combining any of the above with self-report and medical assessments (Ash et al., 2012; Jopp & Schmitt, 2010; Lövdén et al., 2010; Turner et al., 2012; Updegraff & Taylor, 2000).

Assimilative and Accommodative Coping. Throughout one's lifespan, complex internal and external processes interact to create the here and now that an individual experiences, and of course the individual characteristics that give rise to perceptions and judgment. Developmental psychological researchers have devoted much scholarly effort to exploring development of the brain and its ability to understand and process events across the years, as well as differentiating the overall construct of human development from learning processes (Piaget, 2003). Piaget was concerned with developmental mechanisms giving rise to both the acquisition of available knowledge (i.e., assimilative) and the generation of novel conceptualizations (i.e., accommodative or insight processes) (Piaget, 1995). Piaget recognized that any understanding of human development in these regards must include both social and psychological aspects of the human experience, because each can give rise to illusions of truth (Piaget, 1995). This sensibility is confirmed by Kahneman's research on judgment and risk-taking; people tend to use heuristics and biases of both psychological and social origins in judgment (Kahneman, 2011).

A fair amount of nuance exists around difficult events, including individual and social factors that guide one's perception of the event itself and appropriate response. Implicit to these processes is the premise that humans are naturally forward-looking, and

individuals tend to perceive the future as a set of options to be chosen among (Brandtstädter, 2009). These choices are value-laden, meaning that the individual weighs future options against ideals of self and environment that help to form self-identity (Brandtstädter, 2009; Turner et al., 2012). These values provide both guidance in choosing and prioritizing appropriate goals, as well as motivation to pursue the goals (Brandtstädter, 2009; Lövdén et al., 2010; Schulz & Heckhausen, 1996). It is within this context that individual differences not only predispose an individual towards certain goals but also may influence how and to what extent goal pursuit is engaged (Brandtstädter, 2009; Turner et al., 2012).

Considerable mixed methods research has been conducted to gain a better understanding of coping modes as one ages, and the utility of assimilative and accommodative coping modes has found empirical support (Jopp & Schmitt, 2010; Turner et al., 2012). One such study was that by Jopp and Schmitt, whose purpose was to understand how coping strategies, control beliefs and resources predicted adaptation to critical life events in a mid-aged German population (Jopp & Schmitt, 2010). They chose a sample of 420 men and women at midlife (born 1950 to 1952) because they were more likely to experience difficult events, experience them as disruptive, and have both able physical functioning and more personal resources that they could bring to bear on issues that arose from the events (Jopp & Schmitt, 2010). The sample was given a semi-structured interview covering life situation and measuring multiple events, as well as a medical exam and psychiatric screening, cognitive tests, and questionnaires on

sociodemographics and personality (Jopp & Schmitt, 2010). Coping strategies were categorized according to whether they were considered part of an assimilative (goal-oriented) or accommodative (oriented towards matching goals to available resources) mode of coping (Jopp & Schmitt, 2010).

Analyses supported the hypothesis that more resources enabled participants to take a more assimilative approach to coping with difficult events (Jopp & Schmitt, 2010). Those with more resources tended to have altogether fewer negative events and greater overall well-being (Jopp & Schmitt, 2010). Of interest was the finding that high control beliefs could cause one to remain fixated in assimilative modes of coping regardless of efficacy, while low control beliefs were related to greater propensity to engage accommodative modes of coping (Jopp & Schmitt, 2010). Studies such as this one provide deeper understanding of the effects of individual differences on coping and life events as well as means by which a model such as that of assimilative and accommodative coping may be tested.

Jopp and Schmitt's findings indicate that individuals high on the Trait Hope – Agency subscale may have a lower flexibility than those higher on the Pathways subscale. It was initially believed that, reflective of findings that the subscales have an additive effect on one another, the higher aggregate scores on Trait Hope will positively predict cognitive shift (Geraghty, Wood, & Hyland, 2010). Qualitative analyses of cognitive shift indicated that agency plays a central role in cognitive shift. It was therefore predicted that the agency subscale would be more associated with cognitive

shift than the pathways subscale. It was further predicted that the overall Trait Hope scale would have a significant relationship with cognitive shift.

Adult Plasticity Framework. Lövdén and fellow researchers from fields of cognitive aging and neuroscience developed a theoretical framework of adult plasticity in an effort to better explain how age-related cognitive decline may relate to chosen modes of coping (Lövdén et al., 2010). In particular, they were interested in whether mental stimulation can positively alter cognitive performance with older age and even stave off negative effects such as depression and stress (Lövdén et al., 2010). Taking a transactional approach to cognition, the authors described personal resources in terms of "functional supply" and difficult events as "environmental demands" (Lövdén et al., 2010). Additionally, they distinguished between "flexibility," which they described as optimizing performance with current functional supply, and "plasticity," which was defined as capacity to acquire new knowledge or alter one's processing efficiency (Lövdén et al., 2010). In an effort to accurately reflect this work, those terms will be adopted in describing their framework.

The adult plasticity framework is proposed as having seven principles, each of which is an expansion on the previous principle and some of which are speculative about future findings. Lövdén and colleagues' theoretical framework, despite shortcomings related to its lack of integration with individual differences research, provides a useful model for researchers. As applied to adult plasticity, an event occurs and the actor responds with an adequate resource supply for the environmental demands. If the

response is adequate, then dynamic equilibrium (a match between functional supply and environmental demand) occurs. If the response is inadequate but there is another response within the actor's current supply range, then another supply resource will be applied to the demand (Lövdén et al., 2010). If the response is inadequate and new knowledge or some rewiring of the linkages between elements of the problem are possible, then the mismatch may require more effort on the actor's part (Lövdén et al., 2010). The Actor-Stressor Response Framework provides the transition point to incur plastic processes (Lövdén et al., 2010).

Crisis Decision Theory. Sweeny's Crisis Decision Theory draws on coping and decision making research with the goal of depicting how people choose their responses to crises (Sweeny, 2008). Three stages are described by the model, each influenced by appraisal of factors relevant to the decision to be made at that stage. A person assesses the severity of the event and response options are determined, followed by an evaluation of response options in order to choose the correct one. This evaluation is determined by direct and indirect expected consequences as well as the resources required to enact the response option (Sweeny, 2008).

Sweeny does not discuss how cognitive restructuring might play a role in her model, except to note that, "people may reevaluate the severity of an event (i.e., return to the first stage) after they consider their response options. Specifically, people who are unable to generate viable response options may rationalize that the event is perhaps not so severe after all and therefore does not warrant further attention at that time," (Sweeny,

2008, p. 67). Crisis Decision Theory provides a broad and beneficial integration of Folkman and Lazarus' transactional model of stress (1985) and coping as well as Leventhal's self-regulation model of illness (Cameron & Leventhal, 2003), but the theory fails to shed light on why some people will choose to continue to adopt a response that they know is not working and is costing them resources (Dominowski, 1981) or how one might continue to attempt to map prior co-occurrence of experiences and coping strategies onto an unfamiliar event while others become open to reevaluation (Ash et al., 2012).

Problem Solving and Insight Learning. This thesis was introduced with the simple statement that adverse events are, at their essence, problems to be solved. For some, this is a difficult statement to accept given a common perception that difficult events are something to be endured rather than solved. To support their point, critics might note that while problem solving is an accepted mode of coping with difficult events, it is also well-accepted that there are less proactive modes of coping such as acceptance and avoidance (Skinner, Edge, Altman, & Sherwood, 2003). The difference lay in the use of the phrase, "problems to be solved." The phrase, as used in the introduction, does not refer to the use of problem solving as a mode of coping with an isolated situation. Instead, it refers to the role of problem solving in human judgment and decision making (Kahneman, 2011).

In the context of Kahneman's metaphorical agents called System 1 and System 2, an event happens and it is evaluated for familiarity in case prior experience can be

mapped onto the handling of the event (2011). A person's closely held beliefs, motivations, and automatic responses may be activated within System 1 while System 2 monitors in case cognitive effort is necessary (Kahneman, 2011). If the result of this activation is that an individual perceives that a situation is out of their control and something to be endured, this perception nonetheless represents a problem solving process that the mind has engaged in order to arrive at these conclusions. To clarify, the event is the problem and the mental processes are finding solutions to the problem. In this case, the solution is comprised of interpretation and prioritization of the problem, determining its magnitude and novelty (hence the necessity of bringing System 2 to bear), and enacting a mode of coping that seems best suited for obtaining a desirable result at the least expense of an easily taxed cognitive system (Kahneman, 2011). Thus, one who perceives an event as something to forbear arrives at this determination through a rather complex problem solving process activated upon the occurrence of the event. The individual determines that the optimal mode of coping is to endure, which reflects the judgment produced by the problem solving process.

A subset of problem solving literature related to insight has been informed by Gestalt psychologists, whose learning theory was itself a reaction to associational learning theory (Ash et al., 2012). Associational learning theory describes learning as a process of building associations between sensory input such as events or issues, one's responses, and emotions related to success or failure at co-occurrences of the two (Ash et al., 2012). In general, the idea is that learning occurs gradually and even creativity

follows this gradual process of connection-building. Gestalt conceptualizations around insight began with Kohler's observation of problem solving in apes, whereby when food was placed out of reach they would first attempt previously successful methods for reaching the food; once they failed, they would stop activity for a time in which it appeared that all overt problem solving had ceased (Ash et al., 2012). In some cases, they would then enact a new solution that enabled them to reach the food. When put in the same situation later, the apes would only enact the single solution that previously worked (Ash et al., 2012).

From these observations, Kohler and others hypothesized that insight learning involves realizing that previously attempted solutions have not worked and that one does not have prior experience that directly informs the present instance of problem solving (Ash et al., 2012). Some people become functionally fixated, which can lead to impasse (Dominowski, 1981). The impasse refers to the point at which overt problem solving ceases, and at which some people may verbalize being stuck or lost (Ash et al., 2012; Dominowski, 1981). The impasse can become a stubborn, fixed state, or can galvanize an internal trial and error process which culminates in the solution coming to mind suddenly, producing an aha! moment as the solution emerges into consciousness (Ash et al., 2009, 2012; Bowden et al., 2005; Dominowski, 1981).

The aha! moment presents difficulty because at times research that claims to detect insight presents unclear evidence, primarily having to do with fault in research design (Ash et al., 2009). Researchers have found evidence through laboratory tasks that

some people make progress towards solutions when they have not been consciously aware of such progress (Ash et al., 2009). Ash and colleagues note that accumulated evidence on the aha! moment actually indicates that the cognitive restructuring that leads to insight appears to occur gradually as an unconscious process (associational) but that the solution's emergence into consciousness may be subjectively experienced as sudden and unexpected, explaining the aha! moment effect (Ash et al., 2009). It was considered probably at study outset that for some participants cognitive shift would appear as an aha! moment, while for others it might manifest in some subtler fashion. Magnitude of insight or change from the transition process was unknown.

Bowden and colleagues used fMRI and scalp EEG readings to produce evidence that, though controversial, may indicate that the cognitive restructuring required for insight solutions occurs largely in the right hemisphere of the brain (2005).The right hemisphere is believed to play an important role in creativity, activation of alternate meanings and distant associations (Bowden et al., 2005). The researchers found that solvers who reported insight consistently showed this right hemisphere dominance (specifically the right anterior superior gyrus signal) over left hemisphere during problem solving while those who reported no insight showed the opposite pattern (Bowden et al., 2005). The left hemisphere is associated with narrower connections that are based on experience, which supports the notion from the Actor-Stressor Response Framework and developmental theory (Brandtstädter, 2009; Piaget, 1995; Schulz & Heckhausen, 1996) that a person relying on previously co-occurring patterns of situation and response will

engage in associational learning while those who encounter entirely unfamiliar but solvable problems may cognitively shift, which engages more distant connections and creativity using the right hemisphere of the brain. The scalp EEG recordings revealed sudden bursts of high frequency neural activity on the gamma band in the same region of the brain just before participants articulated solutions to problems they were presented for solution (Bowden et al., 2005). A second EEG finding was that 1.5 seconds prior to articulation of insight solutions there was a sudden power increase on the alpha band, suggesting decreased neural activity directly before answers becoming available to the conscious mind (Bowden et al., 2005). Based on their findings, Bowden and colleagues refined their definition of insight as what "occurs when solvers engage distinct neural and cognitive processes that allow them to see connections that previously eluded them," (Bowden et al., 2005, p. 326). It is this definition of insight that is the intended culmination of the cognitive restructuring process of the Actor-Stressor Response Framework. The next section will consider factors that might impair the ability to engage in a cognitive shift; this may generate increased understanding of the construct and its utility in research and prediction models.

Attention-Shifting and Stress

High levels of stress have been shown to impair one's ability to flexibly shift attention (Liston, McEwen, & Casey, 2009), which could have implications for one's ability to engage cognitive shift. Using fMRI, Liston and colleagues detected neural deficits in the strength of connections in the brain network (dorsolateral prefrontal cortex

and other regions) during task performance in subjects under severe stress when compared with a control group of relatively unstressed matched participants (Liston et al., 2009). Similar to animal studies, it was found that the effect was reversible as stress abates, but it has implications for the coping flexibility of actors whose reaction to difficult events is to perceive them as highly stressful, traumatic or creating a crisis.

Work by Lupien, McEwen and others has suggested that chronic stress can more strongly activate the limbic networks in the brain, which are associated with instinct, fear and desire (Lupien, McEwen, Gunnar, & Heim, 2009). Psychopathology can develop (Lupien et al., 2009), as well as dendrite shrinkage that can impair connectivity with areas of the brain associated with flexible attention-shifting (Liston et al., 2009). It may be that high levels of stress and chronic stress could predict that some people will engage prior "tried and true" approaches to coping because the creative, cognitive restructuring processes that could resolve sources of stress can only be accessed with presently unavailable neural networks (see also, Kahneman, 2011).

Resilience

Many people are exposed to high levels of stress[1] during the course of their lives. In some cases, the stressor overwhelms their lives to some degree. Previously enjoyable activities are no longer pursued, social ties are diminished or become lost, and the stressor (and the individual's response to the stressor) seems to set off a chain of

[1] For purposes of this paper, a number of terms are used to describe "stressor," "stress," "highly stressful event," "trauma," or "traumatic event." These and other similar terms are intended to be interpreted by the reader in an approximately synonymous way.

unfortunate events. While stress responses can play an important role in outcomes as dire as the development of psychopathology (Cole, Teti, & Zahn–Waxler, 2003; Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001), this is not inevitable. Some people experience a stressor of high magnitude, yet respond in a way that emphasizes the continued engagement in those "activities that make life worthwhile" (Murray & Zautra, 2012), interacting with social supports, and even learning something of personal significance from the experience. The idea that something positive can be gained as a result of the process of adapting to and recovering from traumatic experience is captured in a growing body of literature on the phenomenon of post-traumatic growth (Tedeschi & Calhoun, 1996a; Woodward & Joseph, 2010; Zautra, Arewasikporn, et al., 2010).

Resilience Definition. The above passage describes a cycle of exposure, reactivity, recovery, and restoration (Williams, Smith, Gunn, & Uchino, 2010). At each point in the cycle there exist different paths one might take in addressing the adaptive challenges posed by exposure to traumatic experience. These paths may represent resilient adaptation or less resilient responses that may result in poor health outcomes. While some researchers have conceptualized resilience in terms of maintaining one's emotional equilibrium and normal life activities in response to a stressor (Bonanno, 2004), another direction has emerged that emphasizes resilience in terms of the three processes that occur following exposure to a stressor (Zautra, Arewasikporn, et al., 2010).

The resilience model presented by Zautra and colleagues defines resilience as "an adaptive response to adversity through the three processes of recovery, sustainability, and

growth" (Zautra, Arewasikporn, et al., 2010). This model unites much psychological theory in its conceptualization of resilience as: (a) an ability to sustain in the midst of crisis, commonly described in terms of homeostasis as a minimal movement from one's baseline psychosocial state following a stressor (Bonanno, 2004), but also comprised of a conscious quality within the person that is more strategic and purposeful; (b) the concept of recovery return to homeostasis, the pre-stress baseline state, after having reacted to stress exposure (Chrousos, 2009), and (c) the possibility of post-traumatic growth; that is, an individual's perception of having learned from or grown as a result of going through a stressful experience (Tedeschi & Calhoun, 1996; Woodward & Joseph, 2010; Zautra, Arewasikporn, et al., 2010). These three processes are markers of resilience that may occur altogether within the same individual, though this is not necessarily the case. In fact, positive adjustment in every process related to resilience may not be desirable if one considers surpassing homeostasis and experiencing growth a desirable outcome. Prior research has found that participants reporting both positive and negative changes related to adjustment tended to report greater post-traumatic growth than those who reported positive changes only (Tedeschi & Calhoun, 1996, 2004; Updegraff & Taylor, 2000). In other words, an individual must overcome challenges, some of which may be seemingly insurmountable at the time, in order to perceive growth.

The resilience model provides an innovative framework for evaluating variables that may affect the outcome of any of the three processes (and, of course, how the resilient processes themselves may predict or correlate with other outcomes). Growth, in

particular, is predicted to be a natural outcome of a person having cognitively shifted into restructuring processes in order to cope with difficult events. Turner and colleagues found that the following factors promoted resilient responding: (1) ability to see the difficult event as part of the larger story of one's life, (2) reevaluation of goals and values, and (3) belief in one's control as evidenced by having and making choices (Turner et al., 2012).

Both quality and extent of recovery and one's ability to sustain activities will be driven by individual differences in perceiving the event and resources, one's goals, values and motivations, prior experiences with adversity, and other relevant factors. One can imagine that a person suffering adversity may be better able to sustain activities if able to relate their response to the present experience from prior event-response co-occurrences, i.e. engage associational learning processes. As a result, it may be fair to surmise that someone able to sustain activities in the midst of a stressor might not need to cognitive shift, since existing coping mechanisms may be working well.

Dispositional Traits

Personality. Underlying the processes of recovery, sustainability, and growth are mechanisms within the individual that provide a navigation system of sorts - to use a commonly understood analogy - for appropriate response. This navigation system is comprised of a set of biopsychosocial factors (Christopher, 2004) that may independently coordinate a response or may interact to determine appropriate response. Many of our individual differences in motor, attentional and emotional reactivity to stressful events are

biologically based. In fact, current findings in neuroscience have broadened our understanding of the underpinnings of personality, emotions and the stress response (Skodol, 2010).

Among the factors that determine one's response to a stressful event are a combination of stable personality traits that are themselves an outgrowth of a combination of temperament and early experience, genetic factors, culture, social history, and dynamic personality processes (Williams, et al, 2010). Teasing out the various internal and external contributions toward individual differences in temperament is one focus of current research. Why is personality important? Enduring personality traits are thought to contribute to health and overall well-being in numerous ways, including the tendency to find oneself in stressful situations, reactivity upon exposure to the stressful event, and perhaps some neural mechanisms that directly affect health and well-being (Bolger & Schilling, 1991).

It is clear that personality variables are quite complex since people are not one-dimensional beings; a person described by trait neuroticism may also have aspects to their personality described by conscientiousness. Each trait may manifest slightly differently as a result of the middle levels of personality, which are built on the combination of genes, biology, environment, and experiences. These interactions can have buffering and magnification effects. For example, prior research tells us that conscientiousness may buffer the negative effects of neuroticism (Williams, et al, 2010). Similarly, trait openness has been associated with positive physical markers and

outcomes (Williams, et al, 2010). For example, research has shown that low openness people have blunted cortisol levels when compared with high openness people (Oswald, Zandi, Nestadt, Potash, Kalaydjian, & Wand, 2006)[2].

The current study analyzed whether negative reactivity (often referred to by personality researchers as neuroticism), openness, and conscientiousness were related to cognitive shift. These traits were represented in the AS U Live study's personality factor analyses and are reviewed in more detail below. In addition, it was hypothesized that another dispositional trait measured in the AS U Live study, Trait Hope, would be related to cognitive shift.

Negative Reactivity[3]. Negative Reactivity is thought to be an enduring personality trait that is marked by higher anxiety and negative affectivity (Bolger & Schilling, 1991). The AS U Live study's factor analysis of negative reactivity loaded similarly. Neuroticism has been repeatedly linked to exposure to a greater number of traumatic events, more interpersonal conflicts, as well as poorer health and resilience outcomes (Green, 1994; Bolger & Schilling, 1991). As early as 1994, neuroticism was listed as a risk factor for PTSD upon exposure to a traumatic event (Green, 1994). It has also been found to predict intrusive thought and avoidance symptoms, which are key expressions of PTSD (Aidman & Kollaras-Mitsinikos, 2006). Further, it has been found to predict longer time to recovery following traumatic experience in past research (McFarlane,

[2] All five commonly recognized personality factors were tested in the Oswald study, and significant gender interactions were found for the other four traits.
[3] The terms negative reactivity and neuroticism will be used interchangeably in the text; where research is discussed, the terminology used by the researchers will be used.

1988; Riolli, Savicki, & Cepani, 2006). In a study of adjustment following the Kosovo crisis, researchers found that high neuroticism, when combined with low extraversion, produced the greatest amount of maladjustment (Riolli et al., 2006). The researchers speculated that these personality traits might be related to high anxiety individuals with lower ability to tap into social supports, though this hypothesis was not specifically tested (Riolli et al., 2006). The same study found that individuals higher in conscientiousness, openness and extraversion were more likely to respond with high resiliency to stressful situations (Riolli et al., 2006). High and low resiliency was determined by deviation from the regression line comprised of event severity (reported stressful events) and overall psychological adjustment (gauged by the Global Severity Index of the Brief Symptom Inventory) (Riolli et al., 2006).

One challenge presented by self-report research involving predominantly neurotic personalities is the question of whether neurotics are exposed to more traumatic events or have a bias recall for traumatic exposure. Research has, in fact, shown that neurotic personalities have a bias towards noticing negatively toned information, but only towards self-referential information (Martin, Ward, & Clark, 1983). A later study used daily diary methods to determine whether high neurotics reported conflict more often than low neurotic people; the study found no significant difference in self-report (Bolger & Schilling, 1991).

Neuroticism was found to have no predictive value or correlation with post-traumatic growth in a prior study, which was a surprising finding for the research team

(Tedeschi & Calhoun, 2004). Given that negative reactivity tends to be characterized by propensities towards avoidance, longer time to recover from difficult events, and poor correlation with growth, it was originally hypothesized that persons with high negative reactivity are less likely to engage cognitive shift.

Conscientiousness. Conscientiousness has been defined in varying ways across studies and personality instruments. The AS U Live study, described further in the Method section, found that conscientiousness included aspects of effortful control, a subscale for measuring control over one's own behavior. Another study sought to uncover the core aspects of conscientiousness (i.e., those aspects not shared or informed by relationship to other personality traits) using 26 scales related to conscientiousness and 7 major personality scales (Roberts, Chernyshenko, Stark, & Goldberg, 2005). Similar to the AS U Live study, they found that conscientiousness was best described by industriousness, order and self-control.

As mentioned in the Roberts article, one of the challenges to determining a potential effect of conscientiousness on resilience-related outcomes is that the literature describes very different conceptualizations of the trait (Roberts et al, 2005). Despite this obstacle, there is consistent literature suggesting that conscientiousness is positively correlated with post-traumatic growth (Linley & Joseph, 2004). Conscientiousness has also been associated with better health behavior decisions (Bogg & Roberts, 2004). Because conscientiousness is associated with growth and active decision making – both of which are related to adaptation in the face of difficult events – it was hypothesized that

conscientious people are more likely to engage in cognitive shift as part of their coping processes.

Openness. Openness as a personality trait is commonly defined as openness to new experiences, emotional responsivity and intellectual curiosity (Knaevelsrud, Liedl, & Maercker, 2010). The AS U Live study associated openness to experience and ego resiliency to the personality trait Openness, supporting previous conceptualizations (Knaevelsrud et al., 2010; Riolli et al., 2006). Significant correlation has been found in previous studies between openness and post-traumatic growth (Tedeschi & Calhoun, 2004). A study of adult survivors of childhood trauma found that the traumatized groups, regardless of chronicity of trauma, were significantly higher than control groups in neuroticism and openness to experience (Allen & Lauterbach, 2007). It was uncertain whether openness increased the risk for victimization in children or was a positive growth-related consequence of early trauma (Allen & Lauterbach, 2007). It may be that openness plays a role in the number of traumas a person may be exposed to, but that it is also related to post-traumatic growth (Allen & Lauterbach, 2007). It was hypothesized that open persons are more likely to engage cognitive shift.

Trait Hope. The Trait Hope Scale used in the AS U Live study follows the conceptualization of hope as a construct combining qualities of agency and flexibility (Snyder et al., 1991). Agency aspects of hope reflect goal-directed determination and motivation. Flexibility aspects of hope (also denoted as pathways) reflects planning to meet goals or appraising goals, requiring flexibility when obstacles arise (Geraghty et al.,

2010; Snyder et al., 1991). Like the personality traits of negative reactivity, conscientiousness and openness, hope is considered dispositional in that a person may typically interact with the world with a certain level of hope. Despite one's disposition towards hope, one's levels of hope may rise or fall depending on circumstances that arise to adjust a person's perceptions (Zautra, Fasman, et al., 2010).

Bandura wrote that self-efficacy, or people's beliefs about their abilities to control aspects of events, was a mechanism of personal agency (Bandura, 1989). Agency can provide one with motivation to accomplish one's goals, but certainly runs the risk of creating fixation on goals (Jopp & Schmitt, 2010). In a study of attrition among study participants, it was found that those highest in agency were more likely to complete the study, while those highest in flexibility were more likely to leave the study early (Geraghty et al., 2010). The authors of the study suspected that some high agency participants may have continued the study regardless of whether it was helpful while some flexible participants dropped out because they recognized that alternative routes might be more helpful (Geraghty et al., 2010). Aspects of both agency and flexibility predicted resilience and current life satisfaction in a study of themes in coping with difficult life events (Turner et al., 2012). It was hypothesized trait hope would be related to cognitive shift. Because of an interest in probing potential additive effects of the two subscales (Geraghty et al., 2010), this was also tested.

Summary and Statement of the Problem

The literature gives ample evidence that progress on adaptive response models to difficult events would benefit from (1) a different methodological approach, (2) consideration of other fields of study, and (3) better understanding of the nature and quality of a transition from an unhelpful understanding and action plan to a more helpful one. Bowden and colleagues wrote that, "supplementing traditional research with newer paradigms would put researchers in position to make another leap forward in our understanding of insight," (Bowden et al., 2005, p. 327). They noted that individual differences may better illuminate processes that impact insight processes (Bowden et al., 2005).

A test of the accuracy of the definition for cognitive shift was whether it could be identified in narratives and scored for use as a variable for statistical analysis. The resulting quantified cognitive shift variable was used as a variable in regression analyses to test the suspected relationship between cognitive shift and dispositional traits, as well as resilience-related outcomes and correlation with participant perception of growth. The study design followed mixed methods research best practices for drawing on the strengths of both qualitative and quantitative research (Kazdin, 2002).

Research Questions

At the outset, four hypotheses were set forth: (1) that cognitive shift is a distinct construct that can be identified, described, and reliably coded for statistical analysis by qualitatively analyzing narratives of recovery from difficult events with a grounded

theory approach; (2) that a quantifiable cognitive shift variable would be related to dispositional traits such as hope, openness, conscientiousness, and negative reactivity, (3) that cognitive shift would predict resilience-related outcomes, and (4) that cognitive shift correlate with perception of growth. The qualitative analysis produced both alterations to initial hypotheses and additional hypotheses for testing. These are discussed in further detail in the Quantitative Results section.

CHAPTER 2

METHOD

The Parent Study

The current study used a subset of the sample from the parent AS U Live study, a multi-level study that aimed to identify biopsychosocial factors in resilience, i.e. those factors which may protect against disability, promote sustained wellbeing, hasten return to homeostasis or even enhance one's sense of recovery following difficult events. The investigators took an interdisciplinary approach to the study that combined laboratory, epidemiological, qualitative and survey methods. In this way, resilience could be examined across a broad spectrum of indicators, including those produced by self-report, behavioral observation, and genotyping.

Site Characteristics. The Phoenix metropolitan area is marked by environmental challenges, rapid growth and social change, and a diverse population of whom many are of retirement age. Maricopa County boundaries define this urban area, which evidences a mixture of old and new neighborhoods, the affluent and impoverished, and ethnically diverse communities. The heterogeneity presented by the neighborhoods of this large city offers a natural laboratory for protective and risk factors for resilient outcomes at both community and individual levels.

Parent Study Sampling Procedure. The sample for the current study consists of 136 participants, who comprise a subgroup of the 800 participants in the longitudinal AS U Live study. The study was designed to understand the effects of resilience factors at

the community, family systems and individual levels on the health of adults aged 40 – 65. A purposive sampling strategy was used, also referred to as sampling for heterogeneity (e.g., see Blankertz, 1998, citing Cook and Campbell, 1979), to recruit participants from 40 census tracts across the metropolitan Phoenix area between the years 2007 and 2012. This was done in order to capture the breadth of influences across the myriad communities in the greater metropolitan Phoenix area, or in other words to increase the external validity of research findings through representativeness of individuals, environment and measured outcomes.

The first step in the sampling strategy was an effort led by Pat Gober, researcher from the Arizona State University School of Geographical Sciences and Urban Planning, to factor analyze variables that engender the 663 census tracts in Maricopa County, Arizona using a combination of available urban planning data and knowledge of social geography in the area. The factor analysis yielded five dimensions that together explain 80% of the variance between census tracts. The dimensions are: (1) social status, describing income, occupation, and education; (2) the presence of school-aged children and multi-person households; (3) retirement communities dominated by persons older than 65; (4) construction growth, particularly housing built between 1995 and 2000; and (5) Native American communities. Based on these five dimensions, investigators were able to identify 11 Gober Types; see Table 2, Gober Types with Income, Race, Age and Children <18 Variables, for more detail. Because the investigators were unable to receive tribal council permission to recruit from Native American communities, they

chose to recruit 20 participants, 10 men and 10 women, each from the remaining ten Gober Types: 4 Census tracts for each Gober type, totaling 40 total Census tracts, for a total of 800 participants.

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Table 2.

Gober types with income, race, age and children <18 variables

Gober Type	**Income Level**	**Racial Composition**	**Age**	**% Households, Children <18**
1	Low income (<$27,373)	Hispanic (>49 %)	25[a]	46%
2	Middle income (>$27,373)	Hispanic (>50 %)	26[a]	47%
3	Low income (<$27,373)	Anglo (non-Hispanic whites >75 %)	20[b] around university; age ranges 63 – 77[b], other areas	9%
4	Middle income (>$27,373 and <$70,179)	Anglo (>75% non-Hispanic); 11% Hispanic	36[b]	33%
5	Middle income (>$27,373 and <$70,179)	Anglo (>75% non-Hispanic); 2% Hispanic; 1% Black	72[b]	2%
6	High income (>$70,179)	Anglo (>75% non-Hispanic); 7% Hispanic; 2% Black; 3% Asian	35[b]	48%
7	High income (>$70,179)	Anglo (>75% non-Hispanic); 5% Hispanic; 1% Black; 2% Asian	44[b]	27%
8*	Low income (<$27,373)	Native American (>50% Indian)	26[b]	48%
9	Low and Middle income (<$70,179)	Mixed race: 11% Hispanic; 77% non-Hispanic white; 6% Asian	32[b]	49%
10	Low and Middle income (<$70,179)	Mixed race: 19% Hispanic; 72% non-Hispanic white	31[b]	42%
11	High income (>$70,179)	Mixed race: 19% Hispanic; 70% non-Hispanic white	34[b]	23%

[a] Mean age
[b] Median age

Addresses for potential participants were obtained through Cole's Reverse Directory and mailing lists that were purchased for the census tracts from which men and women aged 40 – 65 were to be recruited. Potential participants were initially contacted through mailed recruitment letters printed in both English and Spanish. The letters asked recipients to respond either by phone or mail if interested in participating. Those who mailed a response returned the bottom portion of the letter with their contact information. Once contact occurred, potential participants were screened with the standard screening protocol, described further below.

In addition to mailings, recruiters traveled to households approximately one week after letters were mailed to introduce themselves and the study, provide materials about the study, and request participation. If informed consent forms were signed, the participant would receive a packet of questionnaires and a self-addressed, stamped envelope for their return. Inclusion criteria for recruitment were: (1) participant was presently between the ages of 40 and 65 years, and (2) either English or Spanish speaking. Exclusionary criteria were: presence of physical, psychiatric or cognitive impairments during initial recruitment contact, as measured by the Mental Status Questionnaire (MSQ; Kahn & Miller, 1978).

Maintaining balance between the genders in each census tract was a priority, and where one gender was fully recruited for a tract the recruitment efforts then focused on

enrolling the less represented gender from those potential participants who had contacted the study. If the balance could not be obtained through this process then neighborhood canvassing methods were used to actively recruit potential participants from the less represented gender.

Study Process. Prior to the participation, participants gave informed consent. Participants were asked to complete a set of questionnaires within one week of receipt, and received a reminder phone call if they were overdue. Along with questionnaires, participants were also given instructions on how to collect biological samples that would be collected during the home visit. The questionnaires contained questions about participants' perceptions of residential communities, current social network, early development, and personality measures.

Immediately after receipt of the completed questionnaire, participants were scheduled for a phone interview. The phone interview lasted approximately two hours and focused on measuring mental and physical health, ongoing and past stressful life events, participant demographics, and included a semi-structured interview about their self-perceived most stressful life event with narrative about the recovery process. This interview was recorded with the participant's permission and later transcribed for qualitative analysis.

Twenty-five percent of the participants (five per census tract) were randomly selected to participate in a laboratory stress induction and complete daily diaries for a period of thirty days. The diaries and labs were to be completed prior to the home visit,

which was the final step in the first wave. Eight to ten weeks following recruitment, the home visit was conducted in participants' homes. At this time a blood sample was taken by a trained phlebotomist, major life events and health outcomes questionnaires were completed, urine samples and body measurements were taken. Participants were compensated up to $100, with an additional amount ranging up to $140 for participation in the lab and diary measures. A follow up phone interview was completed six months after the participant completed the first wave of the study. The 30-minute follow-up phone interview included measures from the previous phone interview in order to assess two points in time, as well as additional measures of cognition.

Narratives of Recovery. AS U Live study participants, upon consent during the first wave phone interview to share the narrative and be audio taped, were audio-recorded as they gave semi-structured interviews about the most stressful event they could recall. In addition to describing the event in detail and any issues that arose because of the event, participants were asked about resources that they called upon, whether they were helpful, and what they learned from their attempts to cope with the event and surrounding issues. Participants were asked about their perceptions related to how well they believed that they handled the event, to what extent they have recovered from the event, whether they were able to sustain previous activities in the midst of the stress, and whether they experienced personal growth following the resolution of the event. Efforts were made to determine how long ago the event occurred from the date of interview. Terms were not defined for participants; instead, they were encouraged to answer according to their

understanding and embellish with whatever detail they could recall. Though some interviews were current, the majority gave retrospective accounts. See Table 3 for the semi-structured interview pre-scripted questions.

Table 3.

Semi-structured interview questions

Can you start by telling me a little bit about your experience? What happened, when did it happen, what caused it to happen, who was involved or shared the experience (witnessed, etc), what were the circumstances, that sort of thing?
How did you react or respond when this experience first happened or first became clear? What did you do? How did you feel?
Now I'd like to ask you about some areas in which you might have experienced changes that lasted for a week or more after or as a result of this stressful event or experience. Did you experience any changes in amount or type of work that lasted for a week or more after or as a result of this event or experience? Was this change good, bad, both or neither?
Did you experience any changes in financial or money matters that lasted for a week or more after or as a result of this event or experience? Was this change good, bad, both or neither?
Did you experience any changes in relationships with family members that lasted for a week or more after or as a result of this event or experience? Was this change good, bad, both or neither?
Did you experience any changes in relationships with friends that lasted for a week or more after or as a result of this event or experience? Was this change good, bad, both or neither?

Did you experience any changes in physical health that lasted for a week or more after or as a result of this event or experience? Was this change good, bad, both or neither?
Did you experience any changes in religious involvement that lasted for a week or more after or as a result of this event or experience? Was this change good, bad, both or neither?
Did you experience any changes in attention to personal or family security that lasted for a week or more after or as a result of this event or experience? Was this change good, bad, both or neither?
Where there other changes that I have not asked you about, which lasted for more than a week after (EVENT)? That is, new things you did or old things you did not do because of (EVENT)? What was the change? Was this change good, bad, both or neither?
To what extent would you say you have recovered from the experience and resolved problems that arose as a result? Fully recovered / resolved, Mostly recovered / resolved, Somewhat recovered / resolved, Mostly not recovered / resolved, Not recovered / resolved at all, Refused?
You said that you _____ recovered from this event. Could you take about a few minutes to tell me your story about how you recovered and/or what is still bothering you or is still not resolved?
In thinking about how you coped with this experience, were your family and friend's reaction helpful to you, not helpful, neither helpful nor unhelpful, both helpful and unhelpful?
Thinking about how well you handled or are handling the problems that arose from this experience, would you say that you were very satisfied, somewhat satisfied, neither satisfied nor dissatisfied, somewhat dissatisfied, or very dissatisfied with how you handled or are handing the experience?

If you had a similar experience again, how certain are you that you would be able to cope well with its negative aspects? Would you say that you are very certain, fairly certain, in some ways certain and in some ways uncertain, fairly uncertain, or very uncertain you would be able to cope?
To what extent were you able to continue to pursue your interests, goals, and purpose-those activities that give your life meaning-during this experience? Were you fully, mostly, somewhat, mostly not, or not able to continue? You said you were (____ able to continue). Can you give me examples?
To what extent were you able to learn from and grow stronger from this experience? Not at all, a little bit, somewhat, quite a bit, or extremely? Can you tell me more about what you may have learned, and how you think you may have grown stronger as a result?

Seven hundred and twenty-one participants agreed to these interviews, which were conducted by trained graduate and undergraduate research assistants under the supervision of the principal investigator (Zautra). The interviews last approximately fifteen to forty minutes. In order to protect the integrity of the data against corrupted audio files, the structured portion of the interview was entered into Survey Monkey. Research assistants were also trained to provide a written synopsis of the events described and other details of the interview immediately following the interview. These notes were captured in Survey Monkey. The researcher notes, audio recordings, and transcripts of the recordings were used for the current study. Planning included taking care to keep the study design within the boundaries of consent and to preserve participant anonymity and security of the data.

Limitations of Interviews

Interviews involve interactions between two people, which have effects on the data. While the research assistants were uniformly trained to remain neutral but supportive while probing for deeper answers as indicated by the data, it is possible that some research assistants were more curious or supportive than others. Some researchers have found that researchers of either gender behave more warmly towards female participants than male participants (Smagorinsky, 2008). Despite these potential limitations, the interviews analyzed were remarkably consistent in gathering information related to any adaptations to the described stressors. There were no detectable differences in word length or solicitousness among interviews with males (n=56) and females (n=79). The semi-structured format made it possible to ensure that information related to variables of interest, such as post-event growth and satisfaction with one's handling of stressors, were collected.

Coding Life Events. The events described in the narratives were categorized prior to transcription. Thus, open coding of events utilized a combination of researcher notes and audio recordings. The 721 narratives were coded by one graduate research assistant using an Excel spreadsheet, who reduced the data from small, discrete event categories to broader themes. A protocol defining the categories of life events was generated at the conclusion of the open coding process. A second coder, using the protocol and blind to the first coder's work, coded the narratives with 89.6% agreement. 80% interrater agreement is the generally agreed upon threshold for reliability (Creswell, Klassen, Plano

Clark, & Smith, 2011; Creswell, 2009). Where disagreement occurred, the two coders discussed differences and reached an agreement on appropriate categories. This process took approximately two months. The codes that emerged from this process are presented in Table 4.

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Table 4.

Life events codes

Life Event Categories	
Death – describes death of someone narrator knew, often a loved one; may be combined with illness event	**Relationship** – describes stress related to relationships other than family, such as with friends or unmarried romantic partners
Illness – describes illness of oneself or someone narrator knows; often narrator is a caretaker; may be combined with death event	**Family** – describes stress related to family dynamics
Abuse – describes abuse of or by narrator; may include molestation or abuse in childhood; often includes abuse in childhood and as an adult	**Divorce** – describes stress related to divorce from one's spouse; may include divorce of parents or of children.
Misfortune – describes accidents or unexpected tragedies that do not belong in other categories	**Substance Use** – describes stress related to events arising from substance use by narrator or someone narrator knows
Legal – describes legal disputes, actions, or arrests and jail time	**Work** – describes stress related to work, such as poor support, being fired or demoted
Elective Stress (often "good stress") – describes events that narrator chose to undergo such as family vacations,, marriage or house renovations	**Financial** – describes financial stress such as that coming from economic downturn, bankruptcies, foreclosures, and similar

Transcription. Upon consent, each participant was recorded using a standard audio recording device that interfaces with the telephone. Using Survey Monkey, interviewers were encouraged to briefly document the essence of the stressful event in addition to using the software to code responses to the survey questions (e.g., "Thinking

about how well you handled or are handling the problems that arose from this experience, would you say that you were very satisfied, somewhat satisfied, neither satisfied nor dissatisfied, or very dissatisfied with how you handled or are handling the experience?"; answers were coded on a five-point Likert scale within the Survey Monkey application). These aspects of the interview protected against loss of audio, inaudible audio, and provided one of many checks for cleaning the transcripts of the audio.

Appendix 1, Qualitative Data Preparation and Transcription Protocol, contains the details of the software used to import the audio and transcribe it, the secure location for both audio and transcripts, and the instructions for transcription used by the transcription team. The transcription protocol was written by Crys Rivers, a graduate student supervised by Alex Zautra, a principal investigator on the AS U Live study. The transcription team consisted of 14 research assistants, one of whom was designated to co-author the Transcription Cleaning Protocol, which is included in Appendix 2, and lead the data cleaning effort under supervision. The transcription team received training on both the software and protocol by the graduate student, working in small groups so that levels of mastery could be monitored. Each member of the transcription team was randomly assigned audio numbers to transcribe, and a spreadsheet tracked both completion and cleaning of the transcript.

Data cleaning was performed each week in order to determine whether team-wide or individual mistakes were emerging. Team mistakes were not detected after the initial training, though plans were in place to retrain as needed. Individual mistakes affecting

more than 20% of any transcript were addressed by sharing the mistakes through a corrected version of the transcript during a meeting and discussing any aspects of the protocol that needed further training. The transcription work for this study was completed over the course of two semesters.

Methodological Strengths. The parent study has a number of methodological strengths, some of which carry over to the current study. First, the parent study design combined retrospective and prospective data, which gives both context and the prospect for drawing causal inferences about the directionality of effects in future studies. However, it should be noted that the narratives to be used in the current study were retrospective, which makes causal inference difficult. A second strength of the parent study was that an interdisciplinary team, consisting of clinical, developmental, social and quantitative psychological researchers along with collaborators from fields including political science and sustainability, collaborated and agreed upon the best-of-breed measures for personality dimensions, trauma, stressful life events, early developmental experiences, and other aspects of culture, social life, community, health, and finances.

A third strength of the parent study was its use of multiple methods to measure several independent variables. For example, participants answered questions about stressful life events and early trauma in questionnaires; in a phone interview the MINI-PTSD, a reliable, validated measure, was used to gauge traumatic exposure and possible psychopathology. In the same phone interview, participants answered the PERI Life Events and Traumatic Events Questionnaires and were later recorded answering semi-

structured questions about one of their most stressful experiences. In addition, of the 25% of participants randomly selected for laboratory stress induction and diaries, more information was gathered: biological markers of stress response following induction, daily reports of stressors and response. The use of multiple methods reduces concerns about both variance and the constructs used (Kazdin, 2002). The present study employed mixed methods to analyze the nature of cognitive shift.

Overview of Current Study

Participants. The current study's one hundred and thirty-six participants comprise a subgroup of the eight hundred participants from the parent study. The current study was conducted in two stages, and a different sampling strategy was applied at each stage to support the purposes of the investigation. The initial stage employed a phenomenological approach to understanding of how participants' beliefs, assumptions, and experiences shaped their adaptation to adversity, and to identify adaptive mechanisms that may obviate the downward emotional spiral that some people experience as ineffective coping with adversity. Although it was acknowledged that the study investigator was conversant with literature on resilience, the intent of the research was to analyze the data for emergent themes rather than fitting the data to existing theory. For this reason, random sampling was used to select data for analysis and the data was reviewed until theoretical saturation was reached. In this instance, theoretical saturation was the point at which the "cognitive shift" mechanism emerged (n=19). The phenomenological investigation was then terminated to focus efforts on a targeted

exploration of facets of cognitive shift using grounded theory approaches to coding (Corbin & Strauss, 2007; Smagorinsky, 2008).

The investigation targeted when cognitive shift emerged, how it manifested, and those outcomes suggesting that a cognitive shift occurred. In order to get information likely to provide both supportive and discrepant information, a purposive sampling method was chosen. Selection of the one hundred and thirty-six transcripts was made according to the type of life event described by the narratives. Substance use narratives (n=12) were selected because of literature indicating that breaking addiction requires an active, conscious coping process (Center for Substance Abuse Treatment, 2005; Cridland, Deane, Hsu, & Kelly, 2011). Narratives related to death (n=51) and illness (n=35) were selected because these life events, which do not discriminate by age, gender, or socioeconomic status, were most likely to be experienced by a general, representative portion of the sample. Cognitive shift, if exhibited, was expected to be less obvious here than in the substance use narratives. Abuse narratives (n=17) were selected because they were expected to provide discrepant information. For example, cognitive shift might not exist for this group or, if it occurred, it might manifest differently than for a non-abused group. This expectation was based on literature indicating that abuse is typically chronic and that chronic abuse over time wears away one's affective differentiation and ability to appraise situations broadly (Davis, Zautra, & Smith, 2004; Zautra, 2003). Many participants described multiple, cascading events (n=21). They were included in the study in order to examine how cognitive shift might operate in the presence of multiple or

cascading stressors. The demographics for the study sample substantially mirror those of the parent study, and are presented in Table 5.

Table 5.

Sample demographics for current study

Total Sample	136
Gender	
% Female	58.1
Age	
40-45	19
46-55	52
56-65	65
Marital Status	
Married	52
Unmarried, living with partner	16
Committed, not living together	4
Widowed	11
Single, never married	10
Divorced or separated	41
Missing	2
Education	
Did not complete high school	3
High school	15
Trade school	14
Some college	41
College degree	32
Some graduate school	7
Graduate degree	23
Missing	1
% Employed	57.4
Income	
$0-15,000	15
$15,001-25,000	21
$25,001-35,000	15
$35,001-50,000	18
$50,001-65,000	9
$65,001-80,000	20
$80,001-100,000	10
$100,001-125,000	9
$125,001-175,000	7
$175,001-200,000	0
$200,001-300,000	6
More than $300,001	1

Appropriateness of Mixed Methods. Miles, Huberman, and Saldana have written of how starting one's research with qualitative data "has been advocated as the best strategy for discovery, for exploring a new area, and for developing hypotheses," (2014). The current study used a mixed methods approach, with qualitative analytical methods to refine the cognitive shift construct and assist in hypothesis generation, and statistical methods used to validate the cognitive shift construct. While a quantitative researcher may achieve similar results through construction of an instrument administered to participants if the construct is fairly well understood, the qualitative approach is judicious where the goal is to use inductive methods to generate theory or seek new insights into relatively unknown processes or explanations for why and how phenomena occur (Creswell et al., 2011; Kazdin, 2002). Notably, qualitative methods also allow for collection of data when a measure for a construct does not exist, as is the present case (Creswell et al., 2011). An illustrative figure of the overall qualitative analytical approach is provided in Figure 2, Qualitative Analytical Approach: Flowchart.

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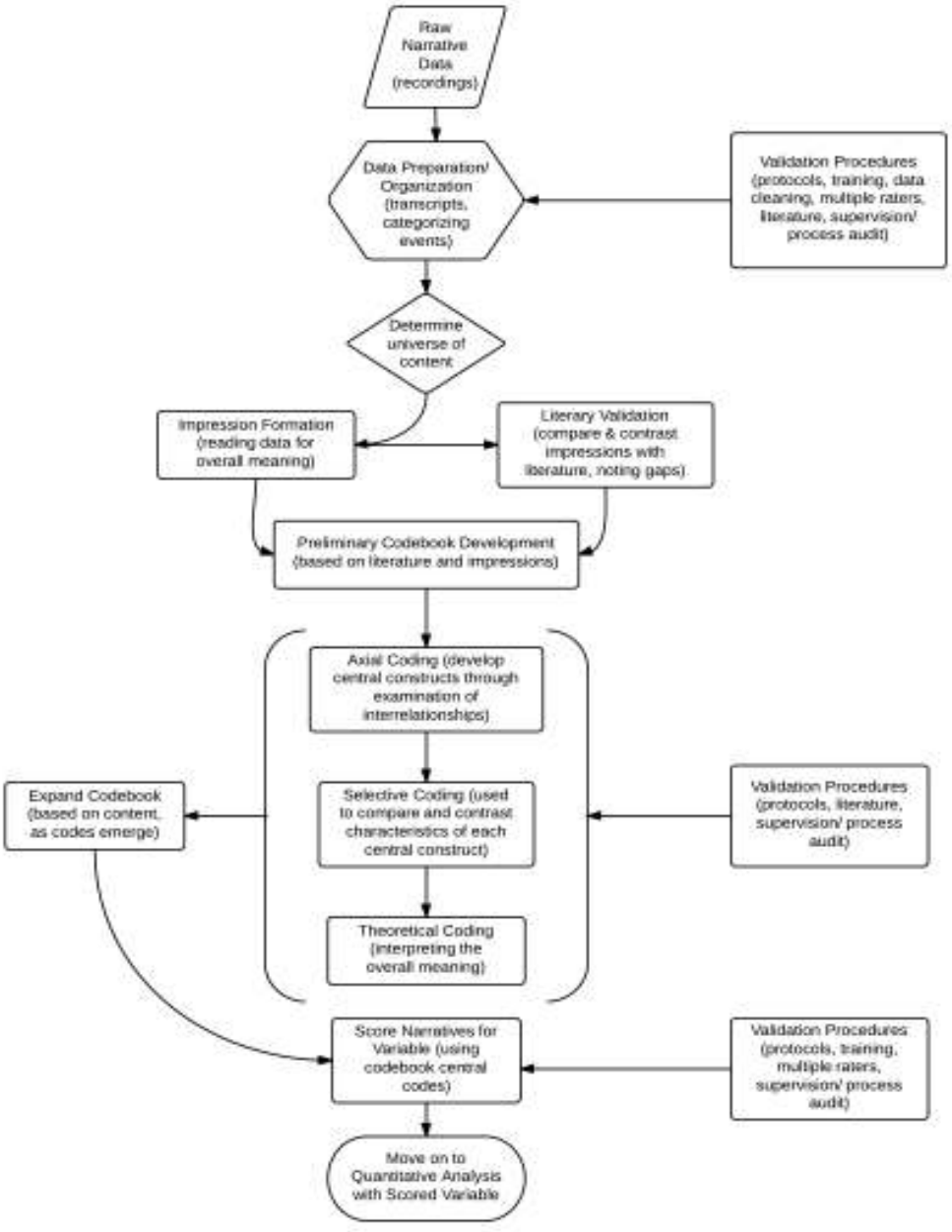
Figure 2.

Qualitative Analytical Approach: Flowchart



(Adapted from Corcoran, 2011; Corcoran, 2011; Creswell, 2009)

Another use for qualitative methods is for the generation of hypotheses (Miles, Huberman, & Saldana, 2014). Qualitative researchers resist the generation of hypotheses prior to a review of the word-based data because hypotheses bely the necessarily exploratory nature of qualitative analysis (Miles et al., 2014; Smagorinsky, 2008). This is in direct contradiction of the methods employed by quantitative researchers (for good overview of quantitative research methods, see Kazdin, 2002). This inconsistency between analytical approaches makes the employment of mixed methods a challenge. Although initial hypotheses were generated prior to the qualitative stage of the study, it was expected that a qualitative review of the interviews would not only lead to a better understanding of cognitive shift, but to more specific hypotheses. As a better understanding of cognitive shift emerged, it was also possible that hypotheses generated prior to a full understanding of cognitive shift may prove unsupported by the qualitative data.

In a mixed methods analysis, it is not uncommon to generate a variable for statistical analysis by transforming the qualitative dataset so that it can be compared with the quantitative dataset (Creswell et al., 2011). The AS U Live narrative accounts were coded and scored based on categories/ descriptors that indicate the occurrence or nonoccurrence of cognitive shift. Taking this step served the purpose of codifying the defining characteristics of a cognitive shift; using statistical methods to analyze the frequency with which the construct occurs for participants may shed light on the relative

utilization and potential importance of cognitive shift in the coping process (Creswell, 2009; Kazdin, 2002).

Among the purposes of these analyses are exploration of processes along with outcomes, developing a more complete picture of how individuals arrive at outcomes, and triangulating and validating the qualitative results (Creswell et al., 2011; Kazdin, 2002). *Triangulation* refers to the point at which different procedures or ways of examining a phenomenon of interest converge on information yielded from the differing analyses (Kazdin, 2002). Validation of the qualitative results accrues through both the qualitative procedures themselves and the use of quantitative methods to triangulate results, which bolsters each type of validity that applies to qualitative research (Creswell, 2009).

Kazdin describes five types of validity that apply to qualitative research: descriptive, interpretive, theoretical, internal, and external (Kazdin, 2002). Descriptive validity refers to the factual accuracy of the account provided by the researcher, while interpretive validity refers to whether the meaning of the material is both understood by the researcher and accurately represented (Kazdin, 2002). Theoretical validity refers to inference at a higher level of abstraction than interpretive validity (Kazdin, 2002), as in the current study's goal to uncover the parameters of the cognitive shift phenomenon within the overall process of coping. Internal and external validity have meanings similar to their usage in quantitative research; namely, that internal validity refers to whether there may be other explanations for the results and external validity refers to whether

findings are "generalizable across people, time, situations, and settings," (Kazdin, 2002, p. 337). External validity is not always a purpose of qualitative analysis because some researchers seek deeper understanding of unique aspects of the human experience (Creswell, 2009). Given the present study goal of uncovering process-related information, meeting the expectation of external validity is necessary to overall validity. Any of the foregoing validities may be affected by the personal biases that the researcher brings to the analysis, much in the way that such biases can creep into quantitative design due to theoretical allegiances, formulation of the research question, and various decisions made in the process of data analyses (Kazdin, 2002). The potential for these biases have been taken into account and addressed in planning each stage of analysis for the current study. Creswell writes that qualitative researchers are typically more trustworthy when they can explicitly identify any biases that may affect their findings (Creswell, 2009). In the present case, ego-related bias may exist insofar as the researcher has theorized a construct that would fill a gap in the literature. Checks on this bias include the supervision the researcher receives in the conduct of the research, use of multiple scorers to ensure interrater agreement, triangulation, and presentation of negative or discrepant information. Other validation checks on the entire process are illustrated in Figure 2.

Grounded Theory Approach. Corbin and Strauss describe *grounded theory* as consisting of systematic steps that involve the generation of categories of information through open coding, positioning critical categories within a theoretical model (axial coding), and continuously considering connections between categories to uncover the

overall story through selective coding (Corbin & Strauss, 2007; Creswell, 2009). Whereas quantitative analysis requires certain sample sizes in order to achieve statistical significance, the strategy in qualitative approaches is to purposefully sample for the participants, events, process, setting, or other factors that will best help the researcher to understand the problem posed by the research question. The research question itself may be informed by an initial analysis of the qualitative materials, some broad conceptualization of concepts related to the setting or nature of the materials (e.g., in a study of hospitals, one may know that hospitals contain nurses, doctors and administrators who follow certain procedures), and may be stimulated by existing literature that gives rise to a comparative investigation (Glaser & Strauss, 1967).

Qualitative Data Analysis. The analysis for the current study began with an initial codebook of theory-driven codes, which took approximately two weeks to develop. It was created with the understanding that there should be flexibility to add data-driven codes as they emerged during the analysis (Corcoran, 2011; Creswell, 2009). Table 1 contains the codes initially believed most likely to capture the essence of cognitive shift in the life events narratives. It was unclear at the outset what aspect of cognitive shift was captured by each code, though it was believed that the transition space itself was most likely characterized by awareness, broadening appraisal, and reorientation (Davis et al., 2004; Froeliger et al., 2012).

A team of four coders analyzed all one hundred and thirty-six transcripts over the course of one academic semester. The original intention was to code until similar

instances began to emerge over and again, gaps in the conceptualization of the construct were filled, and the dimension and range of each category was explicated; this outcome refers to what Glaser and Strauss called *theoretical saturation* (1967). Coding continued past theoretical saturation because the team felt it important to continue challenging assumptions and interrogating the data against those assumptions. This may have been due to investigator dispositions toward precision and introspection.

Throughout coding, which was documented in multiple Excel spreadsheets (one for each investigator) and using printed coding sheets for backup, efforts were made to separate processes and behaviors as well as to continually interrogate interrelationships among codes (Glaser & Strauss, 1967). This was accomplished by two-hour weekly meetings of the investigators in which new findings were discussed and codes critically examined for overlap, discrepancies, and meaning.

The investigator (Rivers) chose a coding team of honors undergraduate students to thoroughly train in the literature, theoretical codes, and method of qualitative research. Most of the students received honors credit towards their research activities, which required that they also write an honors thesis. Research assistants were given the directive to constantly seek information that would prove the theory wrong; this was intended to encourage their active collaboration and to provide a check on validity issues related to researcher bias. In order to promote triangulation through multiple researchers and multiple theoretical lenses, the team reflected diverse academic backgrounds. These included clinical psychology, biological sciences, philosophy, and organizational

psychology. Multivocality, the participants' unique voices, was protected through the process of interactive introspection among the investigators (Tracy, 2010).

The team group-coded eight transcripts during the training period, thoroughly discussing each line item attributed to each code. Once the team began converging in their understanding of the theoretical codes, line item assignments, and actively utilizing memos, the training period was ended and the research assistants were divided into teams of two for each transcript. They were blind to each others' coding in order to preserve the ability to measure interrater reliability at the end of the coding process. Interrater reliability was measured by Cronbach's alpha ($\alpha = .905$) and intraclass correlation and based on the coders' identification of the cognitive shift construct. Intraclass correlation is presented in Table 6.

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Table 6.

Intraclass correlation coefficient

	Intraclass Correlation [b]	*95% Confidence Interval*		*F Test with True Value 0*			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.827[a]	.760	.876	10.536	117	117	.000
Average Measures	.905[c]	.863	.934	10.536	117	117	.000

Two-way mixed effects model where people effects are random and measures effects are fixed.

a. The estimator is the same, whether the interaction effect is present or not.

b. Type C intraclass correlation coefficients using a consistency definition-the between-measure variance is excluded from the denominator variance.

c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

Weekly meetings employed discussion of specific transcripts that called aspects of codes into question or suggested the need for reorganization of coding, new codes, or reconceptualization of the cognitive shift construct. For example, the team began with a set of theoretical codes that were expected to help identify the cognitive shift construct, though they might be antecedents or outcomes rather than defining themes. Coding discussions yielded consensus that resulted in two sets of major revisions to the coding sheet. The first revision eliminated codes that had proved unpredictive and collapsed overlapping categories into larger themes. The second revision re-ordered codes according to antecedents, defining characteristics, and outcomes. Some codes were added and eliminated at that time. Additional memo space was added for perspective

change, positive and negative life factors. The final set of theoretical codes is presented in Table 7.

Table 7.

Final set of cognitive shift codes

ANTECEDENTS TO COGNITIVE SHIFT	**LIFE DISRUPTION –** Difficulty orienting to situation; strong emotional response; complex choices.
	AWARENESS – Conscious engagement with unpredictable or difficult event and feelings.
COGNITIVE SHIFT	**PERSPECTIVE CHANGE –** Behavior or thought change described in relation to consciously wrestling with situation; detecting one's own perceptual errors. "Now includes Goal Coping Mismatch, Broadening Appraisal and Reframing of self-identity."
OUTCOMES OF COGNITIVE SHIFT	**ATTENTIONAL DISENGAGEMENT –** Ceasing previous activities or devoting less time to them.
	REDIRECTION OF ATTENTION – Shifting focus to new goals, motivations, coping, priorities or new mindsets.
	RECONCILIATION – Making meaning of situation and its aspects, reframing event, benefit finding; redefinition of event "boundaries."
RATIO OF POSITIVE TO NEGATIVE FACTORS – affects likelihood and extent of cognitive shift	**POSITIVES –** Factors that make a cognitive shift more likely; e.g., acceptance, forgiveness, social support, agency/ taking responsibility for resolving issues.

	NEGATIVES – Factors that make cognitive shift less likely; e.g., hatred, early abuse, inability to keep different past events separate (temporal blurring), dwelling on the negative, negative affect, emotional arousal too high.

Measures of Potential Covariates.

Early abuse items. The Childhood Trauma Questionnaire (CTQ) is a 25-item self-report survey that measures childhood abuse and neglect in the following areas: emotional, physical and sexual (Bernstein et al., 2003). Each subscale consists of five items beginning with the phrase, When I was growing up" and giving 5-point Likert scale answer options ranging from "Never true" to "Very often true." Factor scales have high internal consistency and retest correlations between .80 and .83 (Bernstein, Fink, Handelsman, & Foote, 1994). Based on the qualitative analysis, it was hypothesized that emotional abuse may play a moderating role in determining whether cognitive shift is accessible. Emotional abuse was defined by the developers of the measure as, "verbal assaults on a child's sense of worth or well-being or any humiliating or demeaning behavior directed toward a child by an adult or older person" (Bernstein et al., 2003, p. 175). A composite score of all three areas of abuse and neglect was created for use in this study.

Measures of Predictors.

The study consists of broad and general analyses planned prior to the qualitative review, as well as more specific hypotheses generated on the basis of the qualitative

study. The variables used in the quantitative analyses are presented in Appendix C, Quantitative Variables Codebook. Below is a description of the variables that includes an overview of those items written specifically for the parent study, factors developed by the investigative team for the parent study, and previously validated scales.

Trait Hope. The Trait Hope Scale used in the parent study consisted of two subscales representing Agency and Flexibility, along with additional filler items (Snyder et al., 1991). As hope relates to goals, agency reflects goal-directed determination, the motivational component to hope, and flexibility (also denoted as pathways) reflects goal appraisal or planning to meet the goals one sets, which is the person's ability to be flexible when obstacles arise (Geraghty et al., 2010; Snyder et al., 1991). The total internal consistency of the Trait Hope Scale obtained Cronbach's alphas ranging from .74 to .84 across samples; the agency subscale Cronbach's alphas ranged from .71 to .76 and the pathways subscale Cronbach's alphas ranged from .63 to .80 (Snyder et al., 1991). Overall Trait Hope, Agency subscale, and Pathways subscale variables were used for analyses in this study.

Personality. Personality was measured using questionnaire data that included all subscales of the Big Five Inventory (Benet-Martinez & John, 1998); negative affectivity and positive temperament were measured with the Adult Temperament Questionnaire (ATQ; Rothbart, Ahadi & Evans, 2000); ego resilience was measured with the 14-item Ego Resilience Scale (Block & Kremen, 1996); and personal mastery (beliefs about one's personal agency and control over topics such as health) was measured with the Personal

Mastery Scale (Pearlin & Schooler, 1978). The AS U Live investigative team performed both exploratory and confirmatory factor analyses on measures related to disposition, ultimately finding a factor structure that included five personality latent variables: (1) negative reactivity, emerging from the Big Five Neuroticism, BIS, and Affective Intensity – Calm subscales; (2) Surgency, emerging from the Big Five Extraversion, BAS, and Affective Intensity – Positive Reactivity subscales; (3) Conscientiousness, emerging from the Activation Control, Attentional Control, Inhibitory Control, and Big Five Conscientiousness subscales; (4) Agency, emerging from the Purpose in Life, Personal Mastery, and Revised Hope – Goal Orientation scales; and (5) Openness, emerging from the Ego Resilience and Emotion Approach Coping scales and the Big Five Openness to Experience subscale. The five factor model of personality from the AS U Live study is presented in further detail in Figure 3.

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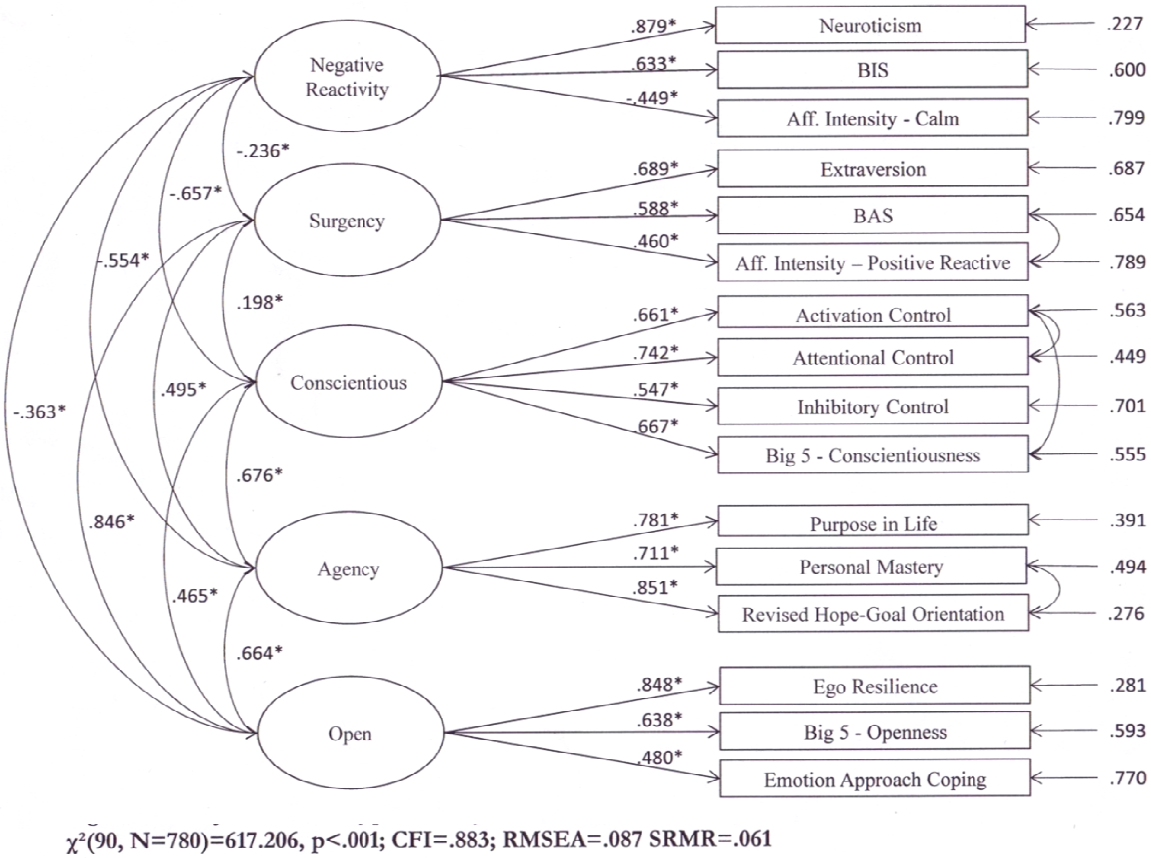
Figure 3.

AS U Live Study five factor model of personality



$\chi^2(90, N=780)=617.206, p<.001$; CFI=.883; RMSEA=.087 SRMR=.061

It was not the intention of the current study to propose hypotheses for each of the five personality factors, but rather to focus on three that may be predictive of cognitive shift. Based on evidence presented by prior literature, it was initially hypothesized that conscientiousness, openness, and negative reactivity are related to cognitive shift. Based on the qualitative analysis, it was (1) additionally predicted that those high on the agency factor would be more likely to experience cognitive shift and (2) predicted that there

would be no relationship of negative reactivity with cognitive shift. There was no strong basis for a prediction on the surgency factor.

Measures of Outcomes.

Handling of Event. Participants' perception of their own satisfaction at how they handled the stressful events described in their narratives was measured by self-report using an item written specifically for the recorded portion of the phone interview. The item regarding satisfaction with handling was: "Thinking about how well you handled or are handling problems that arose from this experience, would you say that you were . . . " The answers options were: (1) Very satisfied, (2) Somewhat satisfied, (3) Neither satisfied nor dissatisfied, (4) Somewhat dissatisfied, (5) Very dissatisfied. It is hypothesized that cognitive shift will predict greater satisfaction with handling of a stressful experience.

Recovery. The participants were asked about their perceived recovery towards the end of the semi-structured interview. The item asked was: "To what extent would you say that you have recovered from the experience and resolved problems that arose as a result?" The answer options were: (1) Fully recovered/ resolved, (2) Mostly recovered/ resolved, (3) Somewhat recovered/ resolved, (4) Mostly not recovered/ resolved, (5) Not recovered/ resolved, and (6) Refused. It is hypothesized that cognitive shift will predict recovery.

Perceived Helpfulness of Family and Friends. This item was asked during the semi-structured interview: "In thinking about how you coped with this experience, were your family and friends' reactions helpful to you, not helpful, neither helpful nor unhelpful, both helpful and unhelpful?" In order to use this variable for statistical analysis, it was recoded as follows: (1) Helpful, (2) Both helpful and unhelpful; neither helpful nor unhelpful, and (3) Unhelpful. It is hypothesized that cognitive shift will be associated with perceived helpfulness of family and friends. A prediction model with helpfulness of family and friends as the outcome will also be run.

Future coping efficacy. Asked during the semi-structured interview, the item was, "If you had a similar experience again, how certain are you that you would be able to cope well with its negative aspects?" The answer options were: (1) Very certain, (2) Fairly certain, (3) In some ways certain, in some ways uncertain, (4) Fairly uncertain, and (5) Very uncertain. It is hypothesized that cognitive shift will predict future coping efficacy.

Sustainability. Participants' ability to sustain those activities that give their lives meaning in the midst of stressful events was measured by self-report using an item written specifically for the recorded portion of the phone interview. The item was, "To what extent were you able to continue to pursue your interests, goals, and purpose—those activities that give your life meaning—during this experience? Were you …" The answer options were: (1) Not able to continue at all, (2) Mostly not able to continue, (3)

Somewhat able to continue, (4) Mostly able to continue, and (5) Fully able to continue. It is hypothesized that there is no relationship between cognitive shift and sustainability, based on the qualitative analysis.

Cognitive Shift. Cognitive shift has boundaries designated as the transition point at which one becomes aware that a environmental demand and resource supply mismatch has occurred, converging with willingness to reappraise the situation via broadened connections (Brandtstädter, 2009), an understanding of the boundaries of the event, and motivation/ agency to generate change. Based on qualitative analysis as further described in the results section, cognitive shift was coded as a dichotomous variable such that 0= no cognitive shift and 1= cognitive shift occurred. Both cognitive shifts as metamorphosis and as micro-shifts were coded as "1."

Measures of Correlates.

Growth. Growth following exposure to a stressor was measured by self-report using an item written specifically for the recorded portion of the phone interview. The item is: "To what extent were you able to learn from and grow stronger from this experience?" The answers options were: (1) Not at all, (2) A little bit, (3) Somewhat, (4) Quite a bit, (5) Extremely. An open-ended follow up question asked participants, "Can you tell me more about what you may have learned, and how you think you may have grown stronger as a result?" Because growth is the expected outcome of cognitive shift, it was hypothesized that the two variables would be correlated.

Quantitative Data Analytic Plan

The quantitative data analysis took place over the course of a month, with time elapses between running frequencies, correlations, and regression analyses. The time elapses occurred for the following reasons: (1) analysis occurred during the holiday season, (2) the investigator became ill for a time, and (3) there were some analyses that required consultation with committee members. Writing up the analyses took place over the course of a week.

Frequencies on all variables of interest were run to compare the sample for the current study with the parent sample used in the AS U Live study. Frequencies were examined to ensure that enough participants answered the question in the selected sample and that answers were not substantially skewed in any direction suggesting that prediction model results would be impaired or meaningless. Because the CTQ scale was used to determine extreme adverse early events, skew towards the negative end of the scale was expected and confirmed. After checking for impairments, all variables were centered before further analyses were run.

Correlation analysis helped to determine variables that might present issues with collinearity, as well as to triangulate whether the cognitive shift variable was behaving as expected with other variables. Following the correlational analysis, regression analyses were run to test the original hypotheses, as well as hypotheses developed in the course of the qualitative stage of the study. Where the dichotomous variable cognitive shift was the outcome, binary logistic regressions were used to determine relationships among the

variables. Where the outcome variables were continuous, ordinary least squares regression analyses were used to determine relationships. It is emphasized that no causality should be implied by the findings, given the lack of experimental design.

For each regression analysis, screening for multivariate outliers was performed. Analysis involved the determination of whether there are cases exerting undue influence such that they need removal from the analyses due to excessive influence, and looking for non-normality. Testing for outliers included use of DFFITS, a measure of global influence, to see if any values over 1.00 are spotted; if so, then DFBETAS was analyzed to determine which predictor(s) the influence was on. Cook's D was analyzed for the influence of one case over the whole model. Standardized residuals were analyzed for values over 2 or 3; goodness of fit statistics was used to determine the appropriate cut point. As needed, other steps recommended by statistical texts may be conducted (Cohen, Cohen, West & Aiken, 2003; Field, 2009).

Missing data and limitations. Missing data was handled by using listwise deletion, such that an entire record was deleted if data on any variable in the equation was absent. This method was chosen because in most models only one to two cases were missing. This study has some analytic limitations. The cognitive shift variable represents a series of decisions made by the research team, which introduces additional variance into the modeling process. The personality factor model used in the current study represents a series of decisions made by an investigative team, also introducing variance into the modeling process. A third limitation was the potential for reduced

sample size due to variables coming from different stages of the AS U Live study, whose longitudinal nature resulted in some attrition. The sample size was found to be sufficient for the analyses to be conducted, so this limitation was overcome. The data for the study is retrospective and all self-report; this limitation is inherent in research using instruments and narration, though it can be partly overcome through triangulation between quantitative, qualitative, and existing literature. Two related methodological strengths of the study are that many variables came from different instruments in the study and the cognitive shift investigative team was blind to the answers on the variables measured in those instruments.

CHAPTER 3

QUALITATIVE RESULTS AND DISCUSSION

Mixed methods research requires the investigator to essentially analyze the data according to two sets of norms (Smagorinsky, 2008). Because the nature of the qualitative data being analyzed is word-based, qualitative researchers tend to intertwine their results presentation with discussion. Statistical analysis, however, is more easily divided into a numbers-based results presentation followed by synthesis of the meaning of the data in a separate discussion section. In order to honor the logic behind both traditions, the qualitative results are presented below with discussion that includes illustrative participant quotes. This is followed by a statistical presentation of results. The Discussion section will analyze the statistical results, also endeavoring to position them in context of the qualitative findings.

Spiraling Emotion Systems

Initial expectations were that selecting transcripts describing different life events were likely to yield contrasting and unique information about the nature of cognitive shift in context of adversity. This proved especially true of the substance use and abuse transcript groups, which each provided information on cognitive shift at extremes of the spectrum. For example, substance use accounts frequently included isolation from social support systems, arrest or legal trouble, and history of succumbing to a downward spiraling emotion system (Garland et al., 2010). Breaking addiction requires an interruption of the spiral, which in many accounts was achieved by overwhelming social

support, court-ordered community support similar to Alcoholics Anonymous, or hitting the metaphorical wall through an event evoking extreme emotion such as humiliation. Other frequent features in these transcripts were early developmental issues such as abuse or neglect, or extreme events such as military combat.

Early Adversity

The majority of abuse-related accounts aimed to describe an adult abusive situation or the death or illness of an abuser, yet many of these alternated in a nearly seamless fashion between accounts of early abuse and neglect and the adult instances of abuse. This seemed to point to a deficit in generating mental boundaries between past and present events. This temporal blurring deficit was consistent for those individuals whose narratives described being stuck in a downward spiral characterized by lack of focus, negative affect, dwelling in the past, and a cycle of coping that yielded poor results (for more information on emotion spirals, see Garland et al., 2010).

Some interviews with participants suffering early adversity were marked by a level of incoherence at telling the story. This is consistent with evidence of how trauma can affect the Broca's area of the brain, which is associated with impaired speech or words related to traumatic events (Kent, 2012). For these people, the past and present events were presented as one large, nebulous life circumstance that was overwhelming and often had become closely identified with their self-definitions. Where events lacked clear boundaries between past and present, and were marked by incoherence and heightened arousal, the result appeared to be a failure to detect ways to change their

circumstances and often seemed to produce a sense of futility. The extreme of this was found in an account by participant 1739, a mother who lost her daughter. When asked how she would cope if it happened again, she replied, "I'd lose it. [I'm] very certain I wouldn't be able to . . . No way. No, next time it's a cyanide pill or a .38 or something."

Many participants still had not emerged fully from the shadow of past events, but had made incremental steps in the right direction. These "micro-shifts" in cognition resulted in small changes in trajectory, and were usually followed by other micro-shifts. Whereas cognitive shift was originally expected to take the form of a metamorphosis, i.e., a profound change, it was often the case for the sample experiencing early adversity that cognitive shift took the form of micromorphosis – a slow evolution. Consistent with scholarly findings, early adversity does not seem to prevent later resilient outcomes (Masten, 2001; Zautra, 2003). Instead, early adversity may change the pathway to resilience (Greenberg, 2008).

An example of the micromorphosis phenomenon could be found in the narrative of participant 1352, who grew up in a violent home and came to rely on the familiarity of violence in her adult life:

> "Well, the experience led me to, to, uh, to choose a -someone who was exactly like my father…I, uh…felt-I felt comfortable with—around violence, you know. I so comfortable, from being raised that way [that] I-I would create it. Just to have that comfort zone. Without knowing it. And, um… if that makes any sense. It's kinda crazy. I did that for a long time,

> in my life, until I realized what I was doing, then I worked daily to, to fix it, you know, to not to not be that way. Sometimes I fall into it, but not very often. . . I don't have much trust in people, that's for sure. Um, mostly men, I have a problem with men. I just don't trust 'em, I don't believe 'em."

The foregoing emphasizes the hard journey involved in realizing 1352's own role in perpetuating violence in her life and learning new ways of interacting with loved ones. However, early violence broke the bond of trust for 1352 at an early age. In her account, she describes herself as continuing to be mistrusting of people. It may be speculated that her trajectory towards resilience is due for another micro-shift in the area of trust.

The last important finding from a qualitative review of the interviews with participants experiencing early adversity was that a person's disposition made a difference in their outcomes. As they relate to measures taken by earlier instruments in the parent study, the dispositional traits that seemed to assist an early adversity participant were conscientiousness, agency, and some level of self-awareness or mindfulness. The latter qualities are captured in the concept of self-compassion. Agency was the term chosen by the qualitative term to describe a desire to be active in seeking more satisfying resolution to problems. This is consistent with the agency personality factor identified by the parent study's investigative team since it includes attentional and activation control qualities. Despite the importance of agency, it appeared that without

the ability to distance oneself from events enough to see the boundaries dividing recent past from far past, agency would not be sufficient for cognitive shift.

The accounts of death and illness, as expected, were common to participants of all socio-economic standings, gender, race, and early experiences. Cognitive shift was often less pronounced in these accounts than in those of substance use, except where early adversity added emotional undertones to the events. Time was most frequently cited where events had low relevance to the narrator's self-concept and evoked low emotional arousal. Time was also cited for those events that caused such heightened emotion that the narrator described being overwhelmed and somewhat paralyzed by its implications. In those cases, poor post-event growth was often described.

Self-Relevance

Participants whose narratives indicated a cognitive shift often described events that had significant relevance to their self-identity, i.e., relevance to how they defined themselves. Where self-relevance was high, the level of emotional arousal accompanying the internal representation of the event tended to be high. However, the qualitative team noticed that there was a *Goldilocks principle* at work in the ability to engage cognitive shift: where emotional arousal was too high or too low, the participants did not ordinarily experience cognitive shift (Opfer & Pedder, 2011).

The affective space for cognitive shift appeared remarkably similar to that required for flow, a positive psychology concept that describes how one can engage in an activity and the experience of it feel effortless, joyful, one in which a person experiences loss of time because of its all-consuming nature (Csikszentmihalyi, 1997). Despite sharing an affective space, cognitive shift and flow experiences differ in a number of ways. For example, flow has a goal or purpose, often external, while cognitive shift has an inner focus. They differ in enjoyment, though the accounts explored for this study described the post-shift experience as a relief even though changes were often difficult.

Flow and cognitive shift share an "aha!" quality in that the affective space they occupy promotes insights that come as if a doorway had opened up. They also share antecedents, namely that a person must have a certain level of personal competence that is well-matched to the challenges presented (Csikszentmihalyi, 1997).

The present study described personal competence, or readiness for cognitive shift, in terms of a ratio of positive to negative life factors and outlook. The descriptions of life factors in the narratives were, themselves, often laced with negatively or positively charged words and tone that brought to mind research on redemption and contamination narratives (McAdams, Reynolds, Lewis, Patten, & Bowman, 2001). This research has developed redemption narratives as turning around previously poor circumstances and those narratives are marked by positive affect and word choices. Contamination narratives are marked by negative affect and words, even when describing superficially positive events.

Ratio of Positive to Negative Life Factors

Resilience and positive psychology literature is rich in detail about the buffering effects of social support, positive affect, and dispositional optimism, openness and mindfulness (Fredrickson et al., 2008; Hampel, Weis, Hiller, & Witthöft, 2011; Nes & Segerstrom, 2006; Zautra, Johnson, & Davis, 2005). The present research similarly revealed these as potentially important factors in one's ability to flexibly adapt to adversity. Social support systems were particularly salient factors in most of the accounts analyzed, though an important feature of this was that social support had to be combined with taking responsibility for one's coping. Without agency, proffered social support seemed to at times create tension and perpetuate or enhance stress.

Just as positive life and dispositional factors bolstered the likelihood that a person would be able to transition from unhelpful coping to more adaptive strategies, negative factors such as temporal and event blurring, extremes of negative affect ("blinded by hate"), and dwelling in the past all appeared to decrease the likelihood of cognitive shift. This notion is consistent with resilience literature (Corbetta, Patel, & Shulman, 2008; Garland et al., 2010; Koenen, Moffitt, Poulton, Martin, & Caspi, 2007; Updegraff & Taylor, 2000). The higher the ratio of positive to negative life factors, the more likely that even those narrators with significant prior adversity would experience cognitive shift and actively attempt to resolve the issues arising from difficult events. This ratio seemed

to play a role in determining the level of emotional arousal an event was likely to evoke, even when highly self-relevant. In addition, the ratio reflects one's personal competence to handle the challenges posed by an event.

Agency

Participants describing a cognitive shift experience tended to also describe motivation to take responsibility for the resolution of their issues. For narrators who were motivated to take responsibility for resolving their own issues, cognitive shift was more likely but still not assured. Some of these narrators found that they already had the resources they needed to cope with the issues at hand. Others were motivated but overwhelmed to find a starting point; this was usually the case where temporal blurring was present and the issues seemed interminable and amorphous. For those who could identify the boundaries of their experiences and sensed that previous efforts to cope had failed to meet their needs, cognitive shift depended on personal competence to resolve the challenges and level of emotional arousal. A key feature in competence as it applies to agency is whether a social support system is in place or attainable to provide a foundation for action. Figure 4 depicts a conceptual flow for antecedent conditions to cognitive shift.

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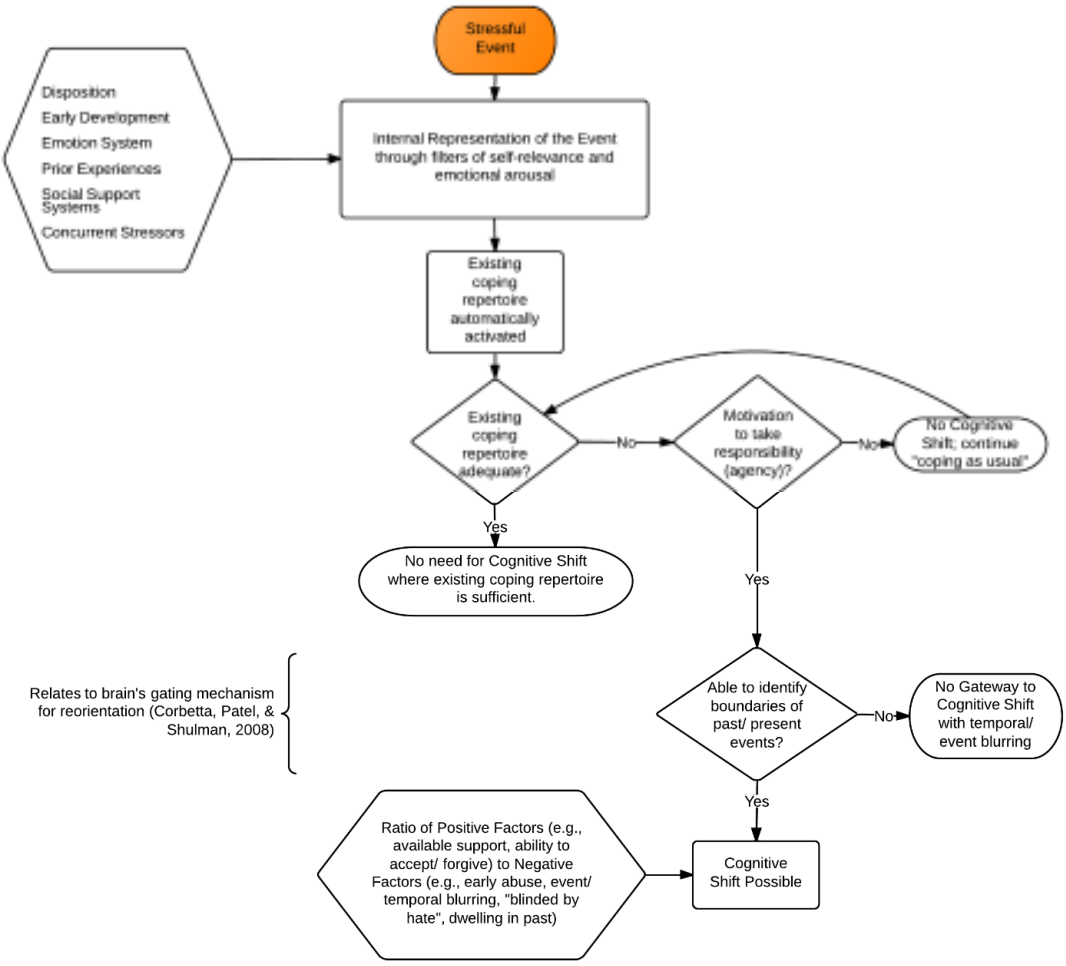
Figure 4.

Framework of pathways affecting cognitive shift



Defining Cognitive Shift

Cognitive shift was revealed within the narratives as perspective change, or reorientation, characterized by broadening appraisal. Its purpose was addressing a mismatch between goals and coping, or a reframing of events and/ or their boundaries. As previously noted, cognitive shift often presented differently in groups with adverse

childhood experiences compared with groups not having those experiences. For those without early adversity, cognitive shifts manifest as a catalyst for metamorphosis; further, related outcomes were more pronounced. For those experiencing early adversity, cognitive shift was typically responsive to smaller epiphanies in the form of micro-shifts, i.e., smaller trajectory changes.

Another phenomenon detected in the narratives was the case of cognitive shift in which, to put it colloquially, a participant described hitting a wall. This "wall" took many forms, most often including sudden shame or humiliation. The effect was detected across all life event categories and, though common in the early adversity accounts, was also present in many accounts by people who did not suffer early issues. Though this effect seems discrepant from the notion that the brain tends to ignore or absorb novel information, change motivated by running out of resources to cope may be related to theories of assimilation and accommodation (Schulz & Heckhausen, 1996). Where resources dwindle to a critical point, it has been theorized that people will switch from assimilation, i.e., attempts to shape the environment to one's goals, to accommodation, or attempts to match resources to the environment. Accommodation includes changing goals to suit one's ability to meet those goals. Table 8 illustrates some differences between cognitive shift as experienced by participants with and without early abuse or neglect, as well as by those whose resources ran out.

Table 8.

Cognitive Shift Exemplars by Early Developmental Experience

Cognitive Shift as Metamorphosis ---------- (no early abuse or neglect)	**Cognitive Shift as Micromorphosis** ---------- (experiencing early adversity)	**Cognitive Shift as Metamorphosis** ---------- ("hitting the wall")
"At that time, I was open, I was ready, and it was time."	"I needed to start that process… of, you know, coming to grips with all that stuff, dealing with it, learning how to forgive."	"I was humiliated, ashamed… that's when, um, I went to treatment for six months. It was [Participant] taking care of [Participant]."
"I had to find my own identity, my self-worth not connected to a husband. But at the time it was extremely painful, extremely hard. But those times are…"	"So when she died there was a lot of this stuff, this anger and hatred came out, just kind of flooded out… But at the same time I felt guilty for feeling that way 'cause she was dead. It's taken the past two years [to realize] … those were all problems in her past and she took them out on me. And it wasn't my fault."	"I literally just about died, scared out of my mind and that was the point where I was like look, I can't do this; I can't do this to my daughter."
"I had to change everything … playgrounds and playfriends. How I felt: um, apprehensive, a little happy, scared, relieved…I didn't have this chain around my neck anymore, this leash …there was just a plethora of feelings."	"I finally realized that…it wasn't necessarily God's fault that these people on earth that, uh, do whatever they want … and I can't keep punishing him for what some nut job did."	"My aunt had a similar experience and she gave me a book called, um, "The Verbally Abused Relationship." And she came over one day and I smuggled it out of my house to give back to her because I had hidden it and that was kind of (crying) … my realization."

Cognitive Shift Outcomes

The outcomes of cognitive shift were redirection of attention, attentional disengagement, and growth (as perceived through meaning making, benefit finding, and

reorientation of self-identity). Where attentional disengagement outweighed redirection of attention, overall negative affect and isolation was often detected. The ratio of positive to negative life factors appeared to have a role in determining whether cognitive shift would be accessible. High negative factors in the interviews was associated with high emotional reactivity, affective narrowing and poor appraisal; this result is consistent with prior research (Garland et al., 2010). Where negative affect is high, the prospect of actualizing a cognitive shift may be daunting. For many, cognitive shift seemed to result in a painful, though necessary, transition. Some participants noted that it was less painful to continue with the "devil you know" than to change. In those cases, the present pain had to become intolerable before the participant took responsibility for change; in this case it may be consistent with the accommodation hypothesis described by Schulz and Heckhausen (1996). Figure 5 depicts how cognitive shift presented in the narratives and outcomes.

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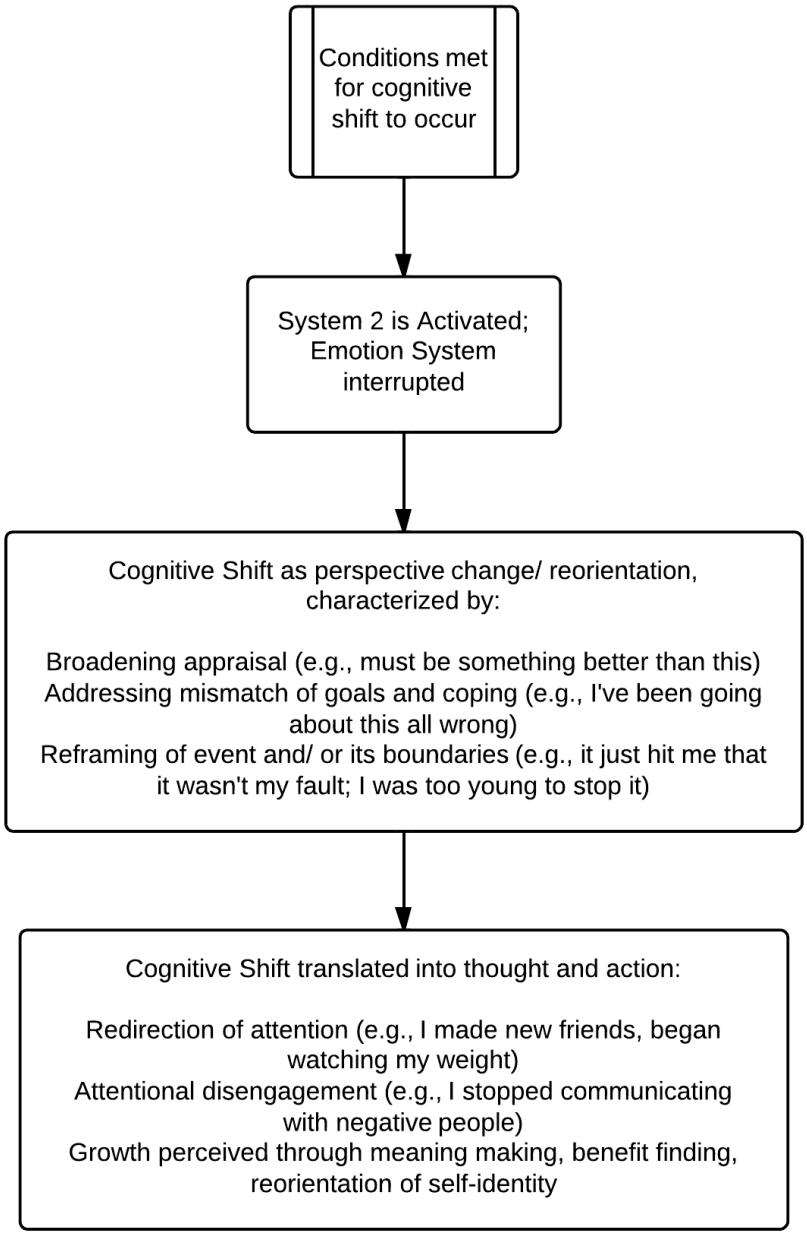
Figure 5.

Cognitive Shift and Outcomes of Cognitive Shift



In the current study, cognitive shift manifested differently for some groups than others, indicating that while resilience may be ultimately available to most people the pathway to resilience may be unique and dependent upon a combination of other factors, such as disposition, early development, emotion system, prior experiences and heuristics, social support, and concurrent stressors. With early adversity, typically the cognitive shift took the form of small trajectory changes, a finding that is consistent with those of Leslie Greenberg, who wrote about the differing paths to recovery for those suffering from early abuse and neglect (Greenberg & Malcolm, 2002; Greenberg, 2008). Cognitive shift is linked through the narratives to resilient outcomes. This suggests that cognitive shift-informed interventions may be effective in both prevention of psychopathology and healing from adversity. Given the differing pathways, however, interventions and expected outcomes would need to be adjusted according to early adversity experiences.

The qualitative study identified an adaptive coping meta-process whose pivot point toward adaptation may be cognitive shift. The antecedents to cognitive shift may be learned through interventions, helping those undergoing adversity to develop more active coping skills, social intelligence skills, and cognitive flexibility. Cognitive shift is theoretically the channel through which resilient outcomes can come to fruition in cases where coping adjustments must be made to yield satisfactory results. Though transitory in nature, cognitive shift may represent the stopgap in the downward emotion system spiral (Garland et al., 2010).

CHAPTER 4

QUANTITATIVE RESULTS

Following the data analytic plan, various SPSS programs were used to examine the variables. Frequencies were examined for impairments leading to poor prediction in models. Frequencies were run for the current study sample, the parent study, as well as for the cognitive shift vs. non-cognitive shift groups in the current study. They were explored to gain a better understanding of how cognitive shift operated for different demographics, histories of adversity, and dispositions. Tables 9, 10, and 11 below provide those results. Of note, cognitive shift appears to be accessible across educational background, gender, race, and age groups. Even at the highest levels of reported abuse, there exists a strong possibility of cognitive shift.

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Table 9.

Demographic frequencies for larger and current study, by cognitive shift (CS) and non-cognitive shift (NCS) subgroups.

Category	Whole Sample (n=782)	CS Study Sample (n=136)	CS Subgroup (n=72)	NCS Subgroup (n=64)
		Demographics		
Gender				
Female	425 (54.3%)	79 (58.1%)	45 (63.4%)	34 (53.1%)
Male	355 (45.4%)	56 (41.2%)	26 (36.6%)	30 (46.9%)
Missing	2 (.3%)	1 (.7%)	1	0
Age				
40-51	194 (24.8%)	29 (21.3%)	15 (24.6%)	14 (23.7%)
52-58	218 (27.9%)	47 (34.6%)	23 (37.7%)	24 (40.7%)
59-65	255 (32.6%)	44 (32.4%)	23 (37.7%)	21 (35.6%)
Missing	115 (14.7%)	16 (11.8%)	11	5
Race				
Caucasian	571 (73.6%)	100 (74.1%)	52 (80.0%)	48 (81.4%)
Black	24 (3.1%)	3 (2.2%)	2 (3.1%)	1 (1.7%)
Amer. Indian	10 (1.3%)	3 (2.2%)	2 (3.1%)	1 (1.7%)
Asian	12 (1.5%)	1 (.7%)	1 (1.5%)	0 (0%)
Nat. Hawaiian	1 (.1%)	0 (0%)	0 (0%)	0 (0%)
2+ races	93 (12.0%)	17 (12.6%)	8 (12.3%)	9 (15.2%)
Missing	65 (8.4%)	11 (8.1%)	7	5
Education				
Did not complete high school	52 (6.7%)	3 (2.1%)	0 (0%)	3 (4.8%)
High school	70 (9.0%)	15 (11.0%)	10 (14.1%)	5 (7.8%)
Trade school	60 (7.7%)	14 (10.3%)	6 (8.5%)	8 (12.5%)
Some college	215 (27.5%)	41 (30.1%)	22 (31.0%)	19 (29.7%)
College degree	190 (24.3%)	32 (23.5%)	20 (28.2%)	12 (18.8%)
Some grad. school	50 (6.4%)	7 (5.1%)	1 (1.4%)	6 (9.4%)
Graduate degree	138 (17.6%)	23 (16.9%)	12 (16.9%)	11 (17.2%)
Missing	7 (.9%)	1 (.7%)	1	0

Table 10.

Early development and stressor event frequencies for larger and current study, by cognitive shift (CS) and non-cognitive shift (NCS) subgroups.

Category	Whole Sample (n=782)	CS Study Sample (n=136)	CS Subgroup (n=72)	NCS Subgroup (n=64)
		Early Development & Stressor Events		
Emotional Neglect				
Never	365 (46.5%)	55 (40.4%)	29 (40.3%)	26 (40.6%)
Rarely	196 (25.1%)	30 (22.1%)	19 (26.4%)	11 (17.2%)
Sometimes	97 (12.4%)	17 (12.5%)	9 (12.5%)	8 (12.5%)
Often	83 (10.6%)	21 (15.4%)	11 (15.3%)	10 (15.6%)
Very Often	36 (4.6%)	13 (9.6%)	4 (5.6%)	9 (14.1%)
Missing	6 (.8%)	1 (.7%)	0	1
Physical Abuse				
Never	584 (74.7%)	95 (69.9%)	49 (68.1%)	46 (71.9%)
Rarely	85 (10.9%)	11 (8.1%)	8 (11.1%)	3 (4.7%)
Sometimes	54 (6.9%)	12 (8.8%)	5 (6.9%)	7 (10.9%)
Often	28 (3.6%)	8 (5.9%)	4 (5.6%)	4 (6.3%)
Very Often	24 (3.1%)	10 (7.4%	6 (8.3%)	4 (6.3%)
Missing	7 (.9%)	0 (0%)	0	0
Sexual Abuse				
Never	650 (83.1%)	103 (75.7%)	56 (77.8%)	47 (73.4%)
Rarely	50 (6.4%)	11 (8.1%)	6 (8.3%)	5 (7.8%)
Sometimes	30 (3.8%)	8 (5.9%)	4 (5.6%)	4 (6.3%)
Often	28 (3.6%)	9 (6.6%)	4 (5.6%)	5 (7.8%)
Very Often	16 (2.0%)	5 (3.7%)	2 (2.8%)	3 (4.7%)
Missing	8 (1.0%)	0 (0%)	0	0
Traumatic Stress Schedule – Life Count				
0	181 (23.3%)	5 (3.7%)	4 (5.6%)	1 (1.6%)
1	182 (23.5%)	20 (14.8%)	14 (19.7%)	6 (9.4%)
2	151 (19.5%)	27 (20.0%)	10 (14.1%)	17 (26.6%)
3	121 (15.6%)	39 (28.9%)	20 (28.2%)	19 (29.7%)
4	74 (9.5%)	25 (18.5%)	14 (19.7%)	11 (17.2%)
5	43 (5.5%)	13 (9.6%)	6 (8.5%)	7 (10.9%)
6	20 (2.6%)	5 (3.7%)	3 (4.2%)	2 (3.1%)
7	3 (.4%)	0 (0%)	0 (0%)	0 (0%)
8	0 (0%)	0 (0%)	0 (0%)	0 (0%)
9	1 (.1%)	1 (.7%)	0 (0%)	1 (1.6%)
Missing	0 (0%)	0 (0%)	0	0

Table 11.

Early development and stressor event frequencies for larger and current study, by cognitive shift (CS) and non-cognitive shift (NCS) subgroups.

Category	Whole Sample (n=782)	CS Study Sample (n=136)	CS Subgroup (n=72)	NCS Subgroup (n=64)
		Dispositional Traits		
Negative Reactivity				
Low	68 (8.7%)	15 (11.0%)	10 (14.1%)	5 (7.9%)
Low-Moderate	326 (41.7%)	49 (36.0%)	24 (33.8%)	25 (39.7%)
Moderate	296 (37.9%)	55 (40.4%)	30 (42.3%)	25 (39.7%)
High	78 (10.0%)	15 (11.0%)	7 (9.9%)	8 (12.7%)
Missing	14 (1.8%)	2 (1.5%)	1	1
Conscientiousness				
Low	75 (9.6%)	15 (11.0%)	5 (6.9%)	10 (16.1%)
Low-Moderate	299 (38.2%)	48 (35.3%)	24 (33.3%)	24 (38.7%)
Moderate	319 (40.8%)	51 (37.5%)	30 (41.7%)	21 (33.9%)
High	81 (10.4%)	20 (14.7%)	13 (18.1%)	7 (11.3%)
Missing	8 (1.0%)	2 (1.5%)	0	2
Openness				
Low	70 (9.0%)	5 (3.7%)	1 (1.4%)	4 (6.5%)
Low-Moderate	311 (39.8%)	52 (38.2%)	24 (33.3%)	28 (45.2%)
Moderate	317 (40.5%)	62 (45.6%)	38 (52.8%)	24 (38.7%)
High	75 (9.6%)	15 (11.0%)	9 (12.5%)	6 (9.7%)
Missing	9 (1.2%)	2 (1.5%)	0	2
Agency				
Low	101 (12.9%)	15 (11.0%)	5 (7.1%)	10 (16.1%)
Low-Moderate	266 (43.0%)	46 (33.8%)	22 (31.4%)	24 (38.7%)
Moderate	306 (39.1%)	55 (40.4%)	33 (47.1%)	22 (35.5%)
High	97 (12.4%)	16 (11.8%)	10 (14.3%)	6 (9.7%)
Missing	12 (1.5%)	4 (2.9%)	2	2
Trait Hope				
Low	36 (4.6%)	9 (6.6%)	4 (5.6%)	5 (7.9%)
Moderate	357 (45.7%)	60 (44.1%)	26 (36.1%)	34 (54.0%)
High	379 (48.5%)	66 (48.5%)	42 (58.3%)	24 (38.1%)
Missing	10 (1.3%)	1 (.7%)	0	1

Each variable was analyzed for skewness and kurtosis using graphical data using the current study sample; descriptives are in Table 12. Only in the case of negative kurtosis was action planned, since underestimates with positive kurtosis in samples over 100 typically disappear (Tabachnick & Fidell, 2001). No cases of negative kurtosis were found. All continuous variables were centered. No univariate outliers requiring correction were detected. However, some multivariate outliers were detected and eliminated.

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Table 12.

Descriptive statistics

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Cognitive Shift	136	1.0	.0	1.0	.529	.0430	.5010	.251
Chronicity	136	1.0	.0	1.0	.537	.0429	.5005	.250
Yrs Since Event	136	5.00	-2.57	2.43	0.00	.1260	1.469	2.159
Self Relevance	136	3.00	-1.99	1.01	0.00	.0808	.9427	.889
Event Duration	136	4.00	-1.96	2.04	0.00	.1380	1.610	2.591
Disruption	136	4.00	-2.95	1.05	0.00	.0844	.9837	.968
Negative Reactivity*	135	3.92	-2.15	1.77	0.00	.0672	.7813	.610
Conscientiousness*	135	4.54	-2.79	1.75	0.00	.0754	.8759	.767
Agency*	135	3.76	-2.21	1.54	0.00	.0748	.8689	.755
Openness*	135	4.57	-2.95	1.61	0.00	.0644	.7482	.560
Trait Hope	135	5.22	-3.25	1.97	0.00	.0970	1.1271	1.270
Self Compassion	135	4.00	-2.56	1.44	0.00	.0676	.7857	.617
Growth	133	4.00	-3.08	.92	0.00	.0861	.9927	.986
Satisfaction	134	4.00	-3.16	.84	0.00	.0855	.9901	.980
Future Coping	133	4.00	-2.98	1.02	0.00	.1070	1.2338	1.522
Recovery	134	4.00	-3.06	.94	0.00	.0769	.8907	.793
ctq_COMPOSITE**	136	9.00	-2.67	6.33	0.00	.2261	2.637	6.953
Valid N (listwise)	129							

* Personality Factors

** Early adversity variable: includes neglect, physical and sexual abuse subscales

Association of Dispositional Traits with Cognitive Shift

It was predicted that certain dispositional traits would be related to cognitive shift. They were: trait hope, openness, conscientiousness, and negative reactivity. Following qualitative analysis, the hypothesis for negative reactivity was called into question by its low qualitative impact, relative to other variables, on cognitive shift and related processes. The qualitative analysis indicated that positive events and disposition were more likely to be correlated with cognitive shift, whereas negative events and disposition might interfere with those effects without being significantly correlated with cognitive shift. Two additional traits were measured based on the hypotheses that (1) agency and (2) self-compassion were related to cognitive shift. Point-biserial correlations were most appropriate given that cognitive shift was scored as a dichotomous variable. The correlations between cognitive shift and dispositional traits are presented in Table 13 below. Notably, there was substantial collinearity between Trait Hope, Agency, Negative Reactivity, Conscientiousness, Openness, and Self Compassion. As hypothesized, there was no relationship between cognitive shift and negative reactivity [r (1) = -.08, p=.357]. Relationships were found between cognitive shift and conscientiousness [r (1) = .226, p= .008], openness [r (1) = .175, p= .042], trait hope [r (1) = .174, p= .043], and self compassion [r (1) = .236, p= .006]. Contrary to hypothesis, there was no significant correlation between cognitive shift and agency [r (1) = .169, p= .051].

Table 13.

Correlations.

		Cognitive Shift	Negative Reactivity	Conscient-Iousness	Agency	Openness	Trait Hope	Self Compassion
Cognitive Shift	Point Biserial Correlation	1	-.080	.226**	.169	.175*	.174*	.236**
	Sig. (2-tailed)		.357	.008	.051	.042	.043	.006
	N	136	135	135	135	135	135	135
Negative Reactivity	Pearson Correlation	-.080ˆ	1	-.557**	-.526**	-.341**	-.602**	-.507**
	Sig. (2-tailed)	.357		.000	.000	.000	.000	.000
	N	135	135	135	135	135	135	135
Conscient-Iousness	Pearson Correlation	.226**ˆ	-.557**	1	.572**	.323**	.651**	.412**
	Sig. (2-tailed)	.008	.000		.000	.000	.000	.000
	N	135	135	135	135	135	135	135
Agency	Pearson Correlation	.169ˆ	-.526**	.572**	1	.501**	.869**	.517**
	Sig. (2-tailed)	.051	.000	.000		.000	.000	.000
	N	135	135	135	135	135	135	135
Openness	Pearson Correlation	.175*ˆ	-.341**	.323**	.501**	1	.606**	.570**
	Sig. (2-tailed)	.042	.000	.000	.000		.000	.000
	N	135	135	135	135	135	135	135
Trait Hope	Pearson Correlation	.174*ˆ	-.602**	.651**	.869**	.606**	1	.591**

	Sig. (2-tailed)	.043	.000	.000	.000	.000		.000
	N	135	135	135	135	135	135	135
Self Compassion	Pearson Correlation	.236**ˆ	-.507**	.412**	.517**	.570**	.591**	1
	Sig. (2-tailed)	.006	.000	.000	.000	.000	.000	
	N	135	135	135	135	135	135	135

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

ˆ. Indicates point biserial correlation

Hypotheses for regression analyses based on disposition were generated prior to and as a result of the qualitative analysis. Analyses based on initial hypotheses will be presented first, followed by additional analyses suggested by the qualitative analysis. Hypotheses are stated first in the language of logistic regression, followed by a translation into more common analytical description.

Trait Hope. The prediction for the overall trait hope variable was that it would predict cognitive shift group membership, i.e., that the presence of trait hope will make it more likely that a person undergoing stressful events can experience a cognitive shift when needed. Data from 135 cases were available for analysis. A test of the model with overall trait hope as the predictor against a constant-only model was statistically reliable, $\chi 2$ (1, N= 135) = 4.134, p< .05, indicating that the predictor was reliably associated with

likelihood of cognitive shift. Table 14 shows regression coefficients, odds ratio, and 95% confidence intervals for odds ratios for overall trait hope. According to Wald criterion, trait hope reliably predicted cognitive shift, $z = 3.991$, $p < .05$.

Table 14.

Logistic regression of overall trait hope predicting cognitive shift

		95% CI for Odds Ratio		
	B (SE)	**Lower**	**Odds Ratio**	**Upper**
Included				
Constant	**.136 (.175)**			
Trait Hope	**.318 (.159)**	**1.006**	**1.374**	**1.876**

There was further probing of Trait Hope through its subscales of Agency and Pathways. Each subscale was run as a separate model, followed by a logistic model in which Pathways was tested at the first level and Agency at the second. Based on the qualitative analysis, agency was predicted to be more associative with cognitive shift than pathways, which relates to cognitive flexibility. The prediction for the trait hope- agency subscale was that the trait hope- agency subscale would predict cognitive shift group membership, i.e., that the presence of agency aspects of trait hope will make it more likely that a person undergoing stressful events can experience a cognitive shift when needed. A test of the model with trait hope agency subscale as the predictor against a

constant-only model was statistically reliable, $\chi 2$ (1, N= 135) = 5.932, p< .05, indicating that the predictor was reliably associated with likelihood of cognitive shift. Table 15 shows regression coefficients, odds ratio, and 95% confidence intervals for odds ratios for overall trait hope. According to Wald criterion, trait hope agency subscale reliably predicted cognitive shift, z = 5.638, p< .05.

Table 15.

Logistic regression of trait hope- agency subscale predicting cognitive shift

		95% CI for Odds Ratio		
	B (SE)	**Lower**	**Odds Ratio**	**Upper**
Included				
Constant	**.136 (.176)**			
Trait Hope – Agency	**.355 (.149)**	**1.064**	**1.426**	**1.911**

The prediction for the trait hope- pathways subscale was that the trait hope – pathways subscale would predict cognitive shift group membership, i.e., that the presence of high levels of the pathways aspects of trait hope will make it more likely that a person undergoing stressful events can experience a cognitive shift when needed. A test of the model with trait hope pathways subscale as the predictor against a constant-only model was statistically reliable, $\chi 2$ (1, N= 135) = 3.269, p= .071, indicating that the predictor was marginally associated with likelihood of cognitive shift. Table 16 shows regression

coefficients, odds ratio, and 95% confidence intervals for odds ratios for overall trait hope. According to Wald criterion, there was only marginal evidence that trait hope agency subscale predicted cognitive shift, z = 3.182, p= .074.

Table 16.

Logistic regression of trait hope- pathways subscale predicting cognitive shift

		95% CI for Odds Ratio		
	B (SE)	**Lower**	**Odds Ratio**	**Upper**
Included				
Constant	**.136 (.175)**			
Trait Hope-Pathways	**.268 (.150)**	**.974**	**1.308**	**1.756**

There was no prediction for the additive model in which the pathways subscale was modeled, followed by the agency subscale. This modeling effort was considered exploratory. Data from 135 cases were available for analysis. At the first step of the logistic regression model, the trait hope pathways subscale as a predictor against a constant-only model yielded $\chi 2$ (1, N= 135) = 3.269, p= .071. At the second step, the trait hope agency subscale is added as a predictor in the model, yielding $\chi 2$ (1, N= 135) = 2.724, p= .099 for the step. The overall model yielded $\chi 2$ (2, N= 135) = 5.993, p= .050, indicating an overall reliable association of the model with cognitive shift. Table 17 shows regression coefficients, odds ratio, and 95% confidence intervals for odds ratios

for the trait hope subscales model. According to Wald criterion, neither subscale alone in the additive model reliably predicted cognitive shift, $z_{pathways} = .061$, p= .804 and $z_{agency} = 2.623$, p= .105. Though additional variables appear to have inflated the confidence intervals, there is no support for additive or suppression effects of entering agency after pathways in a regression.

Table 17.

Logistic regression of trait hope subscales (P, then A) predicting cognitive shift

		95% CI for Odds Ratio		
	B (SE)	**Lower**	**Odds Ratio**	**Upper**
Included				
Constant	**.136 (.176)**			
Trait Hope – Pathways	**-.063 (.254)**	**.571**	**.939**	**1.544**
With Trait Hope – Agency added	**.404 (.250)**	**.919**	**1.498**	**2.443**

Openness Personality Factor. The openness personality factor predicting cognitive shift was tested with the hypothesis that openness would predict cognitive shift group membership, i.e., that the presence of openness personality factor will make it more likely that a person undergoing stressful events can experience a cognitive shift

when needed. Data from 135 cases were available for analysis. A test of the model with openness personality factor as the predictor against a constant-only model was statistically reliable, $\chi 2$ (1, N= 135) = 4.220, p< .05, indicating that the predictor was reliably associated with likelihood of cognitive shift. Table 18 shows regression coefficients, odds ratio, and 95% confidence intervals for odds ratios for openness. According to Wald criterion, openness reliably predicted cognitive shift, z = 3.997, p< .05.

Table 18.

Logistic regression of openness personality factor predicting cognitive shift

		95% CI for Odds Ratio		
	B (SE)	**Lower**	**Odds Ratio**	**Upper**
Included				
Constant	**.136 (.175)**			
Openness	**.488 (.244)**	**1.010**	**1.629**	**2.629**

Conscientiousness Personality Factor. The conscientiousness personality factor predicting cognitive shift was tested with the hypothesis that conscientiousness would predict cognitive shift group membership, i.e., that the presence of conscientiousness personality factor will make it more likely that a person undergoing stressful events can experience a cognitive shift when needed. Data from 135 cases were available for

analysis. A test of the model with conscientiousness personality factor as the predictor against a constant-only model was statistically reliable, $\chi 2$ (1, N= 135) = 7.031, p< .05, indicating that the predictor was reliably associated with likelihood of cognitive shift. Table 19 shows regression coefficients, odds ratio, and 95% confidence intervals for odds ratios for conscientiousness. According to Wald criterion, conscientiousness reliably predicted cognitive shift, z = 6.582, p< .05.

Table 19.

Logistic regression of conscientiousness personality factor predicting cognitive shift

		95% CI for Odds Ratio		
	B (SE)	**Lower**	**Odds Ratio**	**Upper**
Included				
Constant	**.139 (.177)**			
Conscientiousness	**.542 (.211)**	**1.136**	**1.719**	**2.600**

Negative Reactivity Personality Factor. The negative reactivity personality factor was tested against cognitive shift with the hypothesis that negative reactivity would not predict cognitive shift group membership, i.e., that the presence of high levels of negative reactivity personality factor will make it less likely that a person undergoing stressful events can experience a cognitive shift when needed. Data from 135 cases were available for analysis. A test of the model with negative reactivity personality factor as the

predictor against a constant-only model was statistically unreliable, $\chi 2$ (1, N= 135) = .865, p > .05, indicating that the predictor was not reliably associated with likelihood of cognitive shift. Table 20 shows regression coefficients, odds ratio, and 95% confidence intervals for odds ratios for negative reactivity. As expected, there was no consistent relationship between negative reactivity and cognitive shift, z = .856, p > .05.

Table 20.

Logistic regression of negative reactivity personality factor predicting cognitive shift

		95% CI for Odds Ratio		
	B (SE)	**Lower**	**Odds Ratio**	**Upper**
Included				
Constant	**.134 (.173)**			
Negative Reactivity	**-.207 (.224)**	**.524**	**.813**	**1.261**

Analyses on the disposition-cognitive shift relationship generated from qualitative findings. The qualitative analysis findings indicated that early abuse and neglect may alter whether and to what extent a person may be able to engage in cognitive shift. Logistic regression analyses were performed to determine whether early abuse had a moderating effect on the disposition-cognitive shift relationship. Because cognitive shift was a binary outcome variable, logistic regression with SPSS was used to test each hypothesis. Qualitative findings indicated that positive disposition and affect could

potentially outweigh early adversity. It was therefore hypothesized that certain dispositional qualities, such as conscientiousness, agency, hope, openness, and self-compassion might have a buffering effect, making it more probable that a person suffering early adversity could engage cognitive shift when needed.

Effect of Early Adversity on Agency-Cognitive Shift Relationship. Agency emerged as an important element of the cognitive shift model during the qualitative analyses. The hypothesis was that agency should buffer the effects of early adversity, increasing the likelihood that a person with both characteristics would experience cognitive shift. Logistic regression analysis with SPSS was employed to predict the probability that a participant would have reported qualities of cognitive shift in the stressful event interview. The predictor variables were the agency factor and the composite of the CTQ items. A test of the full model with interaction term versus a model with intercept only was statistically significant, $\chi 2$ (3, N=134) = 12.865, $p<.05$. The model was able to correctly classify 57.5% of participants into cognitive shift or non-cognitive shift groups. Table 21 gives the logistic regression coefficient, Wald statistic, significance, and odds ratio with confidence intervals for each of the predictors and the interaction.

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Table 21.

Multiple logistic regression predicting cognitive shift from agency factor and early abuse/ neglect

I. Logistic Regression

A. Initial Log Likelihood Function (intercept is included in the model).
-2 log likelihood 186.286 (D_{null}, the null deviance)
Estimation terminated at iteration number 2 because parameter estimates changed by <.001.

B. Prediction from two predictors (intercept and main effects only).
-2 log likelihood 180.265 (D_{kl}, the model deviance)
Estimation terminated at iteration number 3 because parameter estimates changed by <.001.

	Chi-square	***Df***	**Significance**	
Model Chi Square	5.021	2	.081	$(D_{\text{null}} - D_k)$
	Cox & Snell R^2		**Nagelkerke R^2**	
Model Pseudo-R^2 Values	.037		.049	

C. Regression equation for Block 1: Intercept and Main Effects.

1. Regression coefficients.

						95% *CI*	
Variable	*B*	*SE*	Wald χ^2	*Df*	Significance	Lower	Upper
Agency: agenF_CEN	.448	.219	4.198	1	.040	.02	.88
Early Abuse: ctq_COMP1	-.048	.1734	.077	1	.781	-.39	.29
Constant	.115	.176	.423	1	.516		

2. Odds Ratios.

		95% *CI*	
Variable	Exp(*B*) (odds ratio)	Lower	Upper
Agency: agenF_CEN	1.566	1.020	2.404
Early Abuse: ctq_COMP1	.953	.678	1.340
Constant	1.122		

D. Prediction from three predictors (intercept, main effects, and interaction).
Estimation terminated at iteration number 4 because parameter estimates changed by < .001.
-2 log likelihood 172.421 (D_{k2}, the model deviance)

	Chi-square	***Df***	**Significance**	
Model Chi Square	12.865	3	.005	$(D_{\text{null}} - D_k)$
	Cox & Snell R^2		**Nagelkerke R^2**	
Model Pseudo-R^2 Values	.092		.122	

E. Regression equation for Block 2: Intercept, Main Effects and Interaction.

1. Regression coefficients.

						95% *CI*	
Variable	*B*	*SE*	Wald χ^2	*Df*	Significance	Lower	Upper
Agency: agenF_CEN	.462	.238	3.785	1	.052	.01	.93
Early Abuse: ctq_COMP1	-.062	.198	.100	1	.752	-.45	.33
Interaction of Agency & Abuse	.639	.256	6.218	1	.013	.14	1.14
Constant	.231	.185	1.504	1	.220		

2. Odds Ratios.

		95% *CI*	
Variable	Exp(*B*) (odds ratio)	Lower	Upper
Agency: agenF_CEN	1.587	.997	2.529
Early Abuse: ctq_COMP1	.939	.637	1.385
Interaction of Agency & Abuse	1.894	1.146	3.128
Constant	1.259		

Figure 6 below presents a graph of the slopes of agency and early adversity. The graph indicates that at low levels of agency and low levels of abuse, a participant had

approximately 60% chance of being in the cognitive shift group. At low levels of abuse and high agency, the chance of falling into the cognitive shift group was slightly reduced, at approximately 55%. At low levels of agency and high levels of abuse, a person has 30% chance of falling into the cognitive shift group. At high levels of agency and high levels of abuse, a participant had approximately 75% chance of being in the cognitive shift group, an increase over all other combinations.

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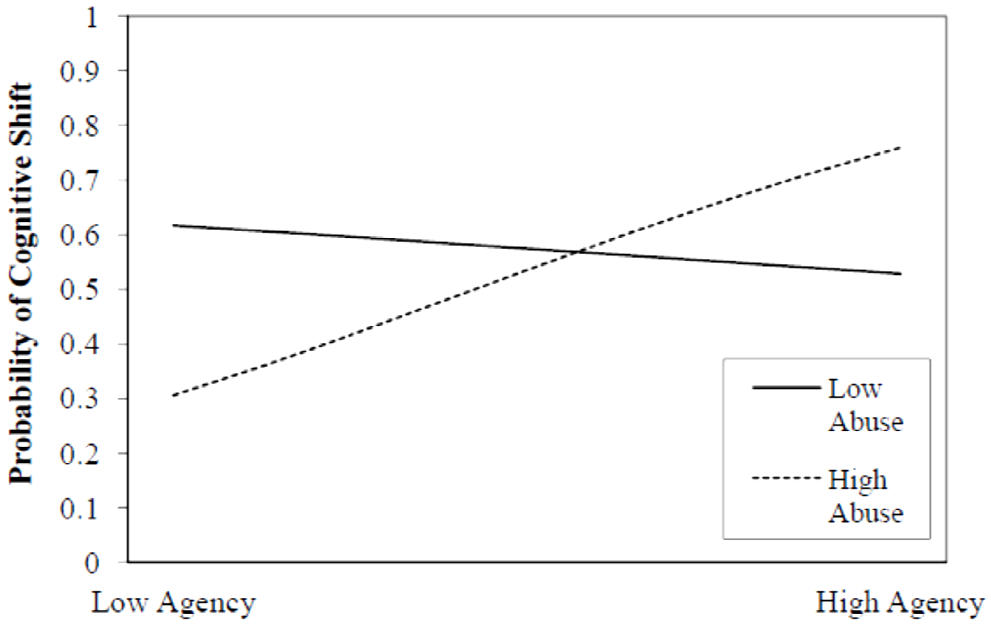
Figure 6.

Moderating effects of early adversity on the agency-cognitive shift relationship



Effect of Early Adversity on Openness-Cognitive Shift Relationship. It was hypothesized that openness should buffer the effects of early adversity, increasing the likelihood that a person with both characteristics would experience cognitive shift. Logistic regression analysis with SPSS was employed to predict the probability that a participant would have reported qualities of cognitive shift in the stressful event interview. The predictor variables were the openness factor and the composite of the CTQ items. A test of the full model with interaction term versus a model with intercept only was statistically significant, $\chi 2$ (3, N=134) = 12.201, $p<.05$. The model was able to

correctly classify 59.7% of participants into cognitive shift or non-cognitive shift groups. Table 22 gives the logistic regression coefficient, Wald statistic, significance, and odds ratio with confidence intervals for each of the predictors and the interaction.

Table 22.

Multiple logistic regression predicting cognitive shift from openness factor and early abuse/ neglect

I. Logistic Regression

A. Initial Log Likelihood Function (intercept is included in the model).
-2 log likelihood 185.286 (D_{null}, the null deviance)
Estimation terminated at iteration number 2 because parameter estimates changed by <.001.

B. Prediction from two predictors (intercept and main effects only).
-2 log likelihood 179.628 (D_{kl}, the model deviance)
Estimation terminated at iteration number 3 because parameter estimates changed by <.001.

	Chi-square	***Df***	**Significance**	
Model Chi Square	5.658	2	.059	$(D_{\text{null}} - D_k)$
	Cox & Snell R^2		**Nagelkerke R^2**	
Model Pseudo-R^2 Values	.041		.055	

C. Regression equation for Block 1: Intercept and Main Effects.

1. Regression coefficients.

						95% CI	
Variable	*B*	*SE*	Wald χ^2	*Df*	Significance	Lower	Upper
Openness: openF_CEN	.545	.252	4.677	1	.031	.05	1.04
Early Abuse: ctq_COMP1	-.119	.169	.494	1	.482	-.45	.21
Constant	.114	.177	.419	1	.517		

2. Odds Ratios.

		95% CI	
Variable	Exp(*B*) (odds ratio)	Lower	Upper
Openness: openF_CEN	1.725	1.052	2.829

Early Abuse: ctq_COMP1	.888	.637	1.237
Constant	1.121		

D. Prediction from three predictors (intercept, main effects, and interaction).
Estimation terminated at iteration number 4 because parameter estimates changed by < .001.
-2 log likelihood 173.084 (D_{k2}, the model deviance)

	Chi-square	***Df***	**Significance**	
Model Chi Square	12.201	3	.007	$(D_{\text{null}} - D_k)$
	Cox & Snell R^2		**Nagelkerke R^2**	
Model Pseudo-R^2 Values	.087		.116	

E. Regression equation for Block 2: Intercept, Main Effects and Interaction.

1. Regression coefficients.

						95% *CI*	
Variable	*B*	*SE*	Wald χ^2	*Df*	Significance	Lower	Upper
Openness: openF_CEN	.656	.267	6.020	1	.014	.13	1.18
Early Abuse: ctq_COMP1	-.157	.190	.680	1	.410	-.53	.22
Interaction of Openness & Abuse	.742	.318	5.454	1	.020	.12	1.37
Constant	.124	.183	.461	1	.497		

2. Odds Ratios.

		95% *CI*	
Variable	Exp(*B*) (odds ratio)	Lower	Upper
Openness: openF_CEN	1.928	1.141	3.256
Early Abuse: ctq_COMP1	.855	.589	1.241
Interaction of Openness & Abuse	2.100	1.127	3.913

Constant	1.132

Figure 7 below presents a graph of the slopes of openness and early adversity. The graph indicates that at low levels of openness and low levels of abuse, a participant had approximately 60% chance of being in the cognitive shift group. At low levels of abuse and high openness, the chance of falling into the cognitive shift group was slightly reduced, at approximately 55%. At low levels of openness and high levels of abuse, a participant was estimated to have approximately 25% chance of falling into the cognitive shift group. At high levels of openness and high levels of abuse, a participant had approximately 72% chance of being in the cognitive shift group, an increase over all other combinations.

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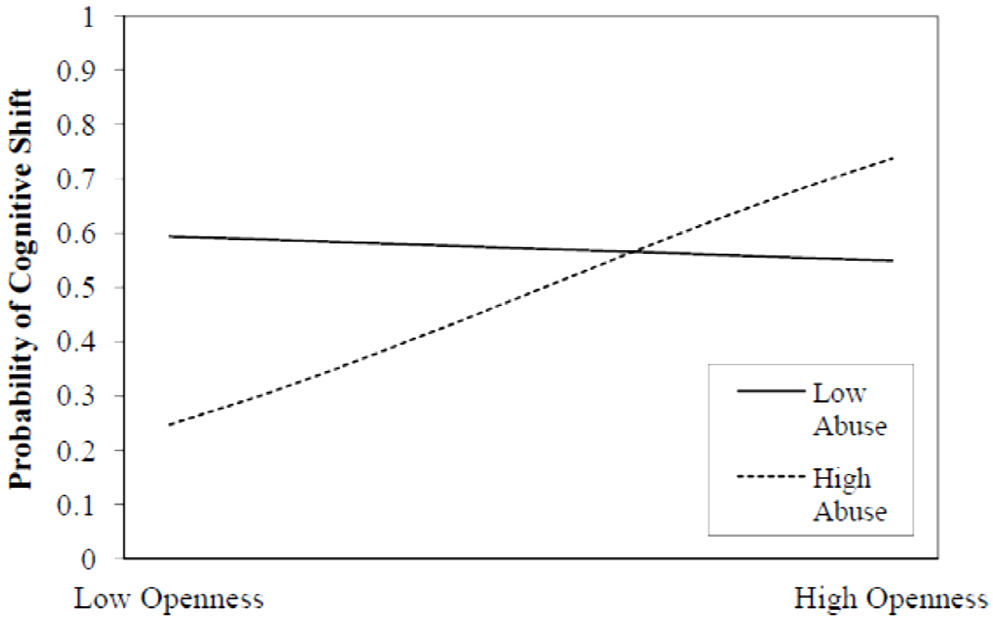
Figure 7.

Moderating effects of early adversity on the openness-cognitive shift relationship



Effect of Early Adversity on Conscientiousness-Cognitive Shift Relationship. It was hypothesized that conscientiousness should buffer the effects of early adversity, increasing the likelihood that a person with both characteristics would experience cognitive shift. Logistic regression analysis with SPSS was employed to predict the probability that a participant would have reported qualities of cognitive shift in the stressful event interview. The predictor variables were the conscientiousness factor and the composite of the CTQ items. A test of the full model with interaction term versus a model with intercept only was statistically significant, $\chi 2$ (3, N=133) = 17.286, p=.001.

The model was able to correctly classify 57.1% of participants into cognitive shift or non-cognitive shift groups. Table 23 gives the logistic regression coefficient, Wald statistic, significance, and odds ratio with confidence intervals for each of the predictors and the interaction.

Table 23.

Multiple logistic regression predicting cognitive shift from conscientiousness factor and early abuse/ neglect

I. Logistic Regression

A. Initial Log Likelihood Function (intercept is included in the model).
-2 log likelihood 184.009 (D_{null}, the null deviance)
Estimation terminated at iteration number 2 because parameter estimates changed by <.001.

B. Prediction from two predictors (intercept and main effects only).
-2 log likelihood 173.664 (D_{kl}, the model deviance)
Estimation terminated at iteration number 3 because parameter estimates changed by <.001.

	Chi-square	***df***	**Significance**	
Model Chi Square	10.344	2	.006	$(D_{\text{null}} - D_k)$
	Cox & Snell R^2		**Nagelkerke R^2**	
Model Pseudo-R^2 Values	.075		.100	

C. Regression equation for Block 1: Intercept and Main Effects.

1. Regression coefficients.

						95% *CI*	
Variable	*B*	*SE*	Wald χ^2	*df*	Significance	Lower	Upper
Conscientiousness: consF_CEN	.669	.226	8.755	1	.003	.23	1.11
Early Abuse: ctq_COMP1	-.114	.173	.493	1	.507	-.45	.23
Constant	.090	.181	.249	1	.618		

2. Odds Ratios.

		95% *CI*

Variable	Exp(*B*) (odds ratio)	95% *CI* Lower	95% *CI* Upper
Conscientiousness: consF_CEN	1.952	1.253	3.040
Early Abuse: ctq_COMP1	.892	.636	1.251
Constant	1.094		

D. Prediction from three predictors (intercept, main effects, and interaction).
Estimation terminated at iteration number 4 because parameter estimates changed by < .001.
-2 log likelihood 166.723 (D_{k2}, the model deviance)

	Chi-square	***df***	**Significance**	
Model Chi Square	17.286	3	.001	$(D_{\text{null}} - D_k)$
	Cox & Snell R^2		**Nagelkerke R^2**	
Model Pseudo-R^2 Values	.122		.163	

E. Regression equation for Block 2: Intercept, Main Effects and Interaction.
1. Regression coefficients.

						95% *CI*	
Variable	*B*	*SE*	Wald χ^2	*df*	Significance	Lower	Upper
Conscientiousness: consF_CEN	.739	.249	8.788	1	.003	.25	1.23
Early Abuse: ctq_COMP1	-.244	.206	1.400	1	.237	-.65	.16
Interaction of Conscientiousness & Abuse	.688	.294	5.480	1	.019	.11	1.26
Constant	.107	.184	.326	1	.568		

2. Odds Ratios.

		95% *CI*	
Variable	Exp(*B*) (odds ratio)	Lower	Upper
Conscientiousness: consF_CEN	2.094	1.285	3.414
Early Abuse: ctq_COMP1	.783	.523	1.174

Interaction of Conscientiousness & Abuse	1.990	1.119	3.540
Constant	1.113		

Figure 8 below presents a graph of the slopes of conscientiousness and early adversity. The graph indicates that at low levels of conscientiousness and low levels of abuse, a participant had approximately 60% chance of being in the cognitive shift group. At low levels of abuse and high conscientiousness, the chance of falling into the cognitive shift group was steady, at approximately 60%. At low levels of conscientiousness and high levels of abuse, a participant was estimated to have less than 20% chance of falling into the cognitive shift group. At high levels of conscientiousness and high levels of abuse, a participant had approximately 75% chance of being in the cognitive shift group, an increase over all other combinations.

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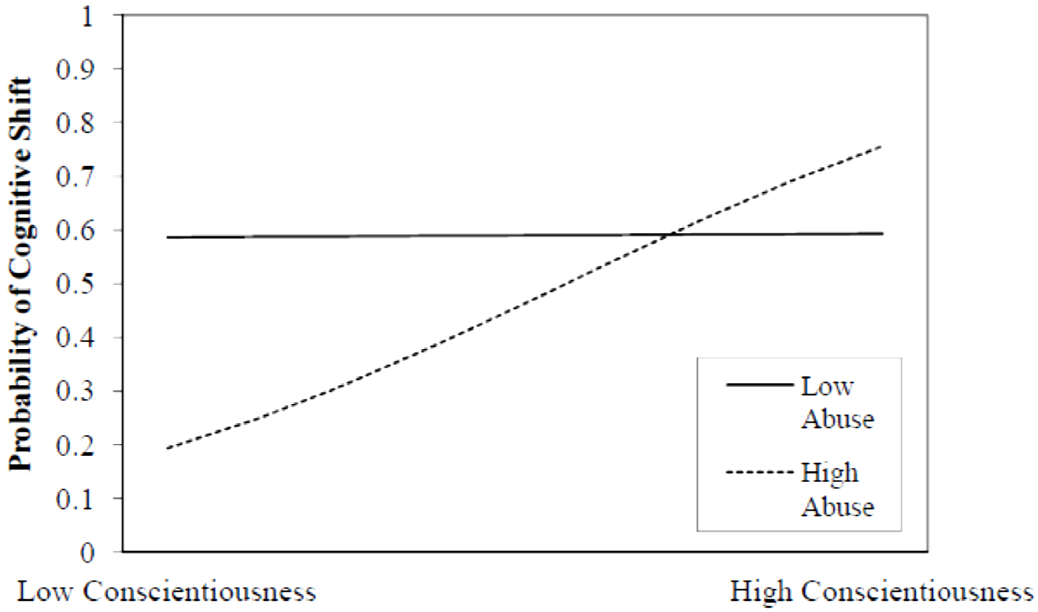
Figure 8.

Moderating effects of early adversity on the conscientiousness-cognitive shift relationship



Effect of Early Adversity on Trait Hope-Cognitive Shift Relationship. It was hypothesized that trait hope should buffer the effects of early adversity, increasing the likelihood that a person with both characteristics would experience cognitive shift. Logistic regression analysis with SPSS was employed to predict the probability that a participant would have reported qualities of cognitive shift in the stressful event interview. The predictor variables were the trait hope composite and the composite of the CTQ items. A test of the full model with interaction term versus a model with intercept only was statistically significant, $\chi 2$ (3, N=134) = 13.744, $p<.01$. The model was able to

correctly classify 63.4% of participants into cognitive shift or non-cognitive shift groups. Table 24 gives the logistic regression coefficient, Wald statistic, significance, and odds ratio with confidence intervals for each of the predictors and the interaction.

Table 24.

Multiple logistic regression predicting cognitive shift from trait hope and early abuse/ neglect

I. Logistic Regression

A. Initial Log Likelihood Function (intercept is included in the model).
-2 log likelihood 185.286 (D_{null}, the null deviance)
Estimation terminated at iteration number 2 because parameter estimates changed by <.001.

B. Prediction from two predictors (intercept and main effects only).
-2 log likelihood 179.697 (D_{kl}, the model deviance)
Estimation terminated at iteration number 3 because parameter estimates changed by <.001.

	Chi-square	***df***	**Significance**	
Model Chi Square	5.588	2	.061	$(D_{\text{null}} - D_k)$
	Cox & Snell R^2		**Nagelkerke R^2**	
Model Pseudo-R^2 Values	.041		.055	

C. Regression equation for Block 1: Intercept and Main Effects.

1. Regression coefficients.

						95% *CI*	
Variable	*B*	*SE*	Wald χ^2	*df*	Significance	Lower	Upper
Trait Hope: thope_CEN	.370	.170	4.735	1	.030	-.04	.70
Early Abuse: ctq_COMP1	-.049	.173	.081	1	.776	-.39	.29
Constant	.114	.177	.412	1	.521		

2. Odds Ratios.

		95% *CI*	
Variable	Exp(*B*) (odds ratio)	Lower	Upper
Trait Hope: thope_CEN	1.447	1.037	2.019

Early Abuse: ctq_COMP1	.952	.677	1.337
Constant	1.120		

D. Prediction from three predictors (intercept, main effects, and interaction).
Estimation terminated at iteration number 4 because parameter estimates changed by < .001.
-2 log likelihood 171.542 (D_{k2}, the model deviance)

	Chi-square	***df***	**Significance**	
Model Chi Square	13.744	3	.003	$(D_{\text{null}} - D_k)$
	Cox & Snell R^2		**Nagelkerke R^2**	
Model Pseudo-R^2 Values	.097		.130	

E. Regression equation for Block 2: Intercept, Main Effects and Interaction.
1. Regression coefficients.

						95% *CI*	
Variable	*B*	*SE*	Wald χ^2	*df*	Significance	Lower	Upper
Trait Hope: thope_CEN	.388	.181	4.596	1	.032	.03	.74
Early Abuse: ctq_COMP1	-.037	.197	.036	1	.849	-.42	.35
Interaction of Trait Hope & Abuse	.508	.195	6.801	1	.009	.13	.89
Constant	.226	.188	1.444	1	.229		

2. Odds Ratios.

		95% *CI*	
Variable	Exp(*B*) (odds ratio)	Lower	Upper
Trait Hope: thope_CEN	1.475	1.034	2.103
Early Abuse: ctq_COMP1	.963	.655	1.416
Interaction of Trait Hope & Abuse	1.662	1.134	2.434

Constant	1.254

Figure 9 below presents a graph of the slopes of trait hope and early adversity. The graph indicates that at low levels of trait hope and low levels of abuse, a participant had approximately 60% chance of being in the cognitive shift group. At low levels of abuse and high trait hope, the chance of falling into the cognitive shift group was slightly reduced, at approximately 53%. At low levels of trait hope and high levels of abuse, a participant was estimated to have approximately 30% chance of falling into the cognitive shift group. At high levels of trait hope and high levels of abuse, a participant had approximately 75% chance of being in the cognitive shift group, an increase over all other combinations.

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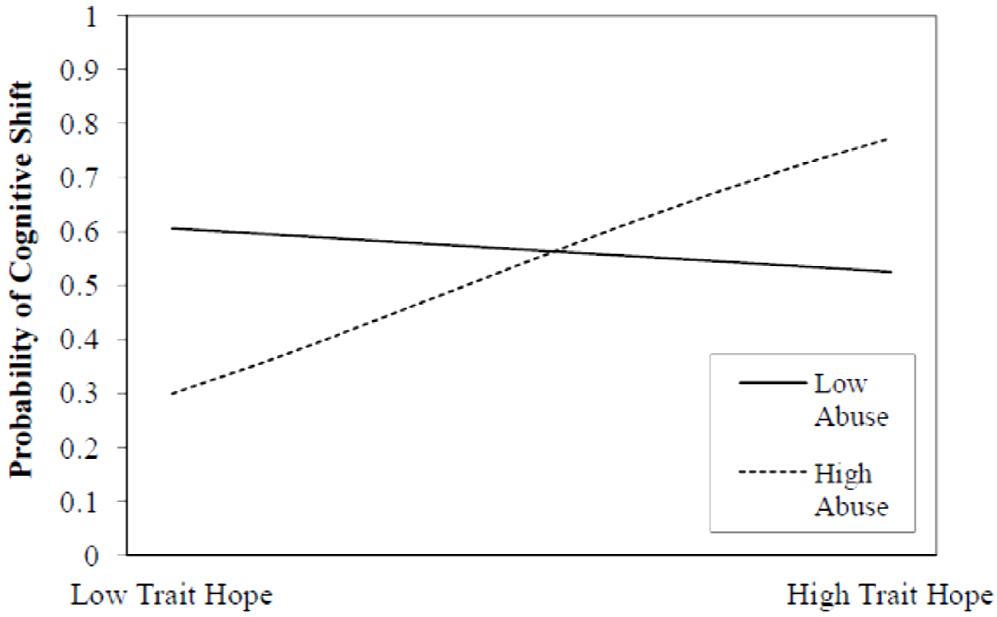
Figure 9.

Moderating effects of early adversity on the trait hope-cognitive shift relationship



Effect of Early Adversity on Self Compassion-Cognitive Shift Relationship. It was hypothesized that self compassion should buffer the effects of early adversity, increasing the likelihood that a person with both characteristics would experience cognitive shift. Logistic regression analysis with SPSS was employed to predict the probability that a participant would have reported qualities of cognitive shift in the stressful event interview. The predictor variables were the self compassion composite and the composite of the CTQ items. A test of the full model with interaction term versus a model with intercept only was statistically significant, $\chi 2$ (3, N=133) = 17.327, p=.001.

The model was able to correctly classify 63.2% of participants into cognitive shift or non-cognitive shift groups. Table 25 gives the logistic regression coefficient, Wald statistic, significance, and odds ratio with confidence intervals for each of the predictors and the interaction.

Table 25.

Multiple logistic regression predicting cognitive shift from self compassion and early abuse/ neglect

I. Logistic Regression

A. Initial Log Likelihood Function (intercept is included in the model).
-2 log likelihood 183.768 (D_{null}, the null deviance)
Estimation terminated at iteration number 2 because parameter estimates changed by <.001.

B. Prediction from two predictors (intercept and main effects only).
-2 log likelihood 173.715 (D_{kl}, the model deviance)
Estimation terminated at iteration number 4 because parameter estimates changed by <.001.

	Chi-square	***df***	**Significance**	
Model Chi Square	10.053	2	.007	$(D_{\text{null}} - D_k)$
	Cox & Snell R^2		**Nagelkerke R^2**	
Model Pseudo-R^2 Values	.073		.097	

C. Regression equation for Block 1: Intercept and Main Effects.

1. Regression coefficients.

						95% *CI*	
Variable	*B*	*SE*	Wald χ^2	*df*	Significance	Lower	Upper
Self Compassion: scomp_CEN	.758	.260	8.483	1	.004	.25	1.27
Early Abuse: ctq_COMP1	-.011	.177	.004	1	.949	-.36	.34
Constant	.142	.181	.613	1	.437		

2. Odds Ratios.

		95% *CI*	

Variable	Exp(*B*) (odds ratio)	95% *CI* Lower	95% *CI* Upper
Self Compassion: scomp_CEN	2.133	1.281	3.552
Early Abuse: ctq_COMP1	.989	.698	1.400
Constant	1.152		

D. Prediction from three predictors (intercept, main effects, and interaction).
Estimation terminated at iteration number 5 because parameter estimates changed by < .001.
-2 log likelihood 166.441 (D_{k2}, the model deviance)

	Chi-square	***df***	**Significance**	
Model Chi Square	17.327	3	.001	$(D_{\text{null}} - D_k)$
	Cox & Snell R^2		**Nagelkerke R^2**	
Model Pseudo-R^2 Values	.122		.163	

E. Regression equation for Block 2: Intercept, Main Effects and Interaction.
1. Regression coefficients.

Variable	*B*	*SE*	Wald χ^2	*df*	Significance	95% *CI* Lower	95% *CI* Upper
Self Compassion: scomp_CEN	.805	.301	7.164	1	.007	.22	1.39
Early Abuse: ctq_COMP1	.094	.211	.199	1	.656	-.32	.51
Interaction of Self Compassion & Abuse	.799	.344	5.400	1	.020	.12	1.47
Constant	.265	.197	1.805	1	.179		

2. Odds Ratios.

Variable	Exp(*B*) (odds ratio)	95% *CI* Lower	95% *CI* Upper
Self Compassion: scomp_CEN	2.236	1.240	4.031
Early Abuse: ctq_COMP1	1.099	.727	1.661

Interaction of Self Compassion & Abuse	2.223	1.133	4.362
Constant	1.304		

Figure 10 below presents a graph of the slopes of self compassion and early adversity. The graph indicates that at low levels of self compassion and low levels of abuse, a participant had approximately 55% chance of being in the cognitive shift group. At low levels of abuse and high self compassion, the chance of falling into the cognitive shift group was slightly reduced, at approximately 52%. At low levels of self compassion and high levels of abuse, a participant was estimated to have approximately 28% chance of falling into the cognitive shift group. At high levels of self compassion and high levels of abuse, a participant had approximately 82% chance of being in the cognitive shift group, an increase over all other combinations.

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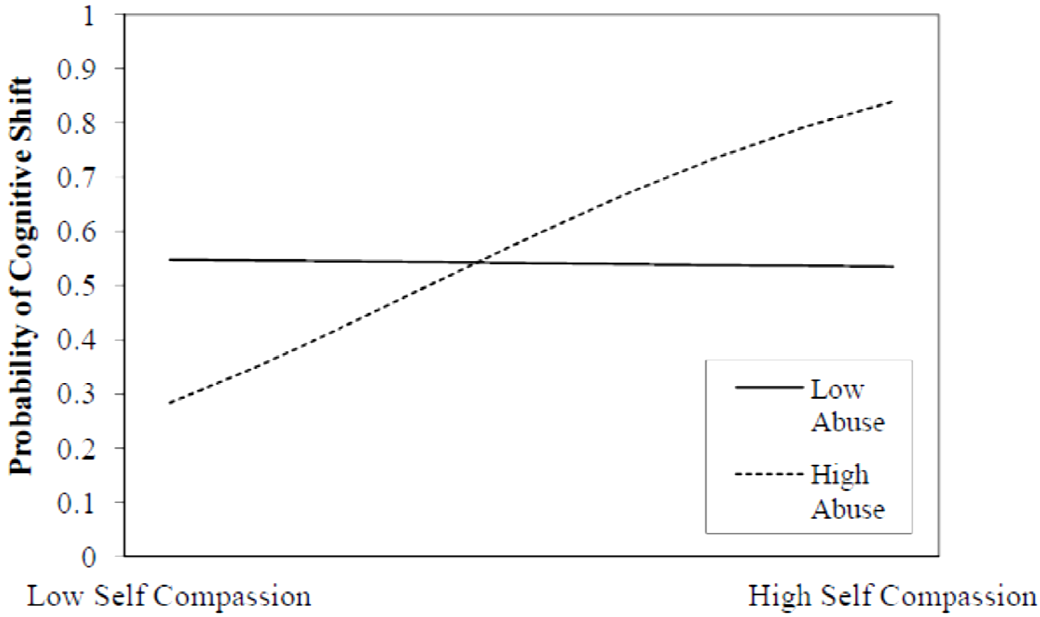
Figure 10.

Moderating effects of early adversity on the self compassion-cognitive shift relationship



Effect of Early Adversity on Negative Reactivity-Cognitive Shift Relationship. In order to determine whether the hypothesis that a negative reactivity and early adversity interaction would not be predictive of cognitive shift group membership, the model was tested using logistic regression analysis with SPSS. The predictor variables were the negative reactivity factor and the composite of the CTQ items. A test of the full model with interaction term versus a model with intercept only was not statistically significant, $\chi 2$ (3, N=135) = 3.335, $p > .05$. The model was able to correctly classify 55.6% of

participants into cognitive shift or non-cognitive shift groups. In the main effects only model, negative reactivity and early adversity were not statistically significant, $\chi 2$ (3, N=135) = 1.083, p > .05. Table 26 gives the logistic regression coefficient, Wald statistic, significance, and odds ratio with confidence intervals for each of the predictors and the interaction.

Table 26.

Multiple logistic regression predicting cognitive shift from negative reactivity factor and early abuse/ neglect

I. Logistic Regression

A. Initial Log Likelihood Function (intercept is included in the model).
-2 log likelihood 186.549 (D_{null}, the null deviance)
Estimation terminated at iteration number 2 because parameter estimates changed by <.001.

B. Prediction from two predictors (intercept and main effects only).
-2 log likelihood 185.466 (D_{kl}, the model deviance)
Estimation terminated at iteration number 3 because parameter estimates changed by <.001.

	Chi-square	***df***	**Significance**	
Model Chi Square	1.083	2	.582	($D_{\text{null}} - D_k$)
	Cox & Snell R^2		**Nagelkerke R^2**	
Model Pseudo-R^2 Values	.008		.011	

C. Regression equation for Block 1: Intercept and Main Effects.

1. Regression coefficients.

						95% *CI*	
Variable	*B*	*SE*	Wald χ^2	*df*	Significance	Lower	Upper
Negative Reactivity: negrF_CEN	-.180	.231	.603	1	.437	-.63	.27
Early Abuse: ctq_COMP1	-.080	.171	.218	1	.640	-.42	.26
Constant	.134	.173	.602	1	.438		

2. Odds Ratios.

Variable	Exp(*B*) (odds ratio)	95% *CI* Lower	95% *CI* Upper
Negative Reactivity: negrF_CEN	.836	.531	1.315
Early Abuse: ctq_COMP1	.923	.661	1.290
Constant	1.144		

D. Prediction from three predictors (intercept, main effects, and interaction).
Estimation terminated at iteration number 3 because parameter estimates changed by < .001.
-2 log likelihood 183.214 (D_{k2}, the model deviance)

	Chi-square	***df***	**Significance**	
Model Chi Square	3.335	3	.343	$(D_{\text{null}} - D_k)$
	Cox & Snell R^2		**Nagelkerke R^2**	
Model Pseudo-R^2 Values	.024		.033	

E. Regression equation for Block 2: Intercept, Main Effects and Interaction.
1. Regression coefficients.

Variable	*B*	*SE*	Wald χ^2	*df*	Significance	95% *CI* Lower	95% *CI* Upper
Negative Reactivity: negrF_CEN	-.161	.238	.458	1	.499	-.63	.31
Early Abuse: ctq_COMP1	-.059	.178	.108	1	.742	-.41	.29
Interaction of Negative Reactivity & Abuse	-.321	.222	2.098	1	.148	-.76	.11
Constant	.202	.181	1.242	1	.265		

2. Odds Ratios.

Variable	Exp(*B*) (odds ratio)	95% *CI* Lower	95% *CI* Upper
Negative Reactivity:			

negrF_CEN	.851	.534	1.357
Early Abuse: ctq_COMP1	.943	.665	1.338
Interaction of Negative Reactivity & Abuse	.725	.470	1.120
Constant	1.224		

Test of Positive Dispositions. Because the dispositional variables were collinear, a logistic regression was performed including all variables in order to determine whether there was unique variance in the dispositional relationships to cognitive shift. An exploratory main effects model was run with the following predictor variables: agency factor, openness factor, conscientiousness factor, self compassion composite and negative reactivity factor. Trait hope was left out of the analysis because its goal orientation subscale is part of the Agency factor. A test of the full model with main effects with intercept only was statistically significant, $\chi 2$ (5, N=135) = 12.936, p= .024. The model was able to correctly classify 61.5% of participants into cognitive shift or non-cognitive shift groups. Table 27 gives the logistic regression coefficient, Wald statistic, significance, and odds ratio with confidence intervals for each of the predictors. Of note is the lack of unique variance for agency. Only conscientiousness ($\chi 2$= 3.756, p= .053) and self compassion ($\chi 2$= 3.155, p= .076) approached significance in their relationship to cognitive shift with all dispositional predictors included.

Table 27.

Logistic regression of disposition predicting cognitive shift

		95% CI for Odds Ratio		
	B (SE)	**Lower**	**Odds Ratio**	**Upper**
Included				
Constant	**.150 (.181)**			
Conscientiousness	**.536 (.277)**	**.994**	**1.709**	**2.940**
Agency	**.000 (.292)**	**.564**	**1.000**	**1.772**
Openness	**.132 (.314)**	**.617**	**1.141**	**2.110**
Self Compassion	**.570 (.321)**	**.943**	**1.767**	**3.314**
Negative Reactivity	**.443 (.311)**	**.846**	**1.557**	**2.867**

Association of Context Variables with Cognitive Shift

During the qualitative study, themes of life disruption, self-relevance, event chronicity, event type and the number of years since event occurred were all numerically coded for statistical analysis. The qualitative research team called these "context variables." A logistic regression was performed including all variables in order to determine whether there were unique and significant relationships of any of the variables to cognitive shift, as well as to determine how predictive context of an event was for cognitive shift group membership. An exploratory main effects model was run with

event type dummy coded such that multiple events was the comparison variable. A test of the full model with main effects and intercept was statistically significant, $\chi 2$ (6, N=135) = 37.301, p=.001. The model was able to correctly classify 71.9% of participants into cognitive shift or non-cognitive shift groups. In this analysis, statistical significance was present for the number of years since the event (χ^2= 15.728, p=.001), self relevance (χ^2= 9.498, p=.002), life disruption (χ^2= 12.098, p=.001), death events (χ^2= 7.684, p=.006), and abuse events (χ^2= 5.213, p<.05). Notably, event chronicity was not significant (χ^2= .107, p=.743). It is possible that event chronicity and years since event variables were measuring the same construct, with no unique variance for chronicity. Other variables lacking relationship to cognitive shift in the model are illness events (χ^2= 2.509, p=.113), substance use events (χ^2= .926, p=.336), and multiple events (χ^2= 1.404, p=.236). The lack of relationship in the model may be due in part to the small subsample endorsing the substance use and multiple events categories. Table 28 gives the logistic regression coefficient and odds ratio with confidence intervals for each of the predictors.

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Table 28.

Logistic regression of contextual variables predicting cognitive shift

		95% CI for Odds Ratio		
	B (SE)	**Lower**	**Odds Ratio**	**Upper**
Included				
Constant	.240 (.202)	.860	1.271	1.89
Event Chronicity	.077 (.234)	.682	1.080	1.708
Years since Evt	.685 (.173)	1.414	1.984	2.784
Self Relevance	1.137 (.369)	1.512	3.116	6.420
Disruption	-1.278 (.367)	.136	.279	.572
Death	-2.077 (.749)	.029	.125	.544
Illness	-1.076 (.679)	.090	.341	1.291
Abuse	-2.051 (.898)	.022	.129	.748
Substance Use	-.869 (.903)	.071	.419	2.461

Correlations and Standard Regression Analyses

Both correlational and standard regression analyses were performed. While correlations helped to establish relationships, regressions were also performed with cognitive shift as the independent variable and the following dependent variables:

satisfaction with event handling, future coping efficacy, perceived helpfulness of family and friends, and extent of recovery from issues arising from stressful events. Analysis was performed using SPSS CORRELATIONS, REGRESSION, FREQUENCIES, and CASE SUMMARIES for evaluation of data. Regression was used in place of one-way ANOVA as a user preference, it being understood that ANOVAs are a special case of regression and that both analyses mathematically yield the same results (Aiken & West, 1998). Generally speaking, the variance was small for the regression analyses performed. Evaluation of the data led to recoding all dependent variables such that scales consistently ran from most negative to most positive (e.g., 1= Not at all, 5= Fully able to continue). Additionally, the recovery item included an option to refuse to answer (i.e., 6=refused). Thus, "6" was recoded as missing data.

Table 29 presents the results of the correlation analysis. As expected, there was a relationship between cognitive shift and the resilience outcome variables recovery [r (1) = .452, p= .001], satisfaction [r (1) = .293, p= .001], future coping [r (1) = .228, p= .008], helpfulness of family and friends [r (1) = .214, p= .013], and growth [r (1) = .231, p= .008]. Sustainability was included to triangulate against the expectation that there would be no relationship between cognitive shift and the ability to sustain in the midst of stressful events. The neutral hypothesis of no relationship was confirmed in the model [r (1)= .042, p= .627].

Table 29.

Correlations between cognitive shift and resilience outcome variables.

		Cognitive Shift	Satisfac-tion	Future Coping	Sustain	Recov-ery	Growth	Friends Family
Cognitive Shift	Point biserial Corr.	1	.293**	.228**	.042	.452**	.231**	.214*
	Sig.		.001	.008	.627	.000	.008	.013
	N	136	134	133	134	134	133	134
Satisfac-tion	Pearson Corr.	.293**ˆ	1	.591**	.240**	.485**	.419**	.362**
	Sig.	.001		.000	.005	.000	.000	.000
	N	134	134	133	133	133	132	134
Future Coping	Pearson Corr.	.228**ˆ	.591**	1	.239**	.455**	.393**	.256**
	Sig.	.008	.000		.006	.000	.000	.003
	N	133	133	133	132	132	131	133
Sustain	Pearson Corr.	.042ˆ	.240**	.239**	1	.357**	-.046	.313**
	Sig.	.627	.005	.006		.000	.596	.000
	N	134	133	132	134	133	133	133
Recovery	Pearson Corr.	.452**ˆ	.485**	.455**	.357**	1	.252**	.395**
	Sig.	.000	.000	.000	.000		.004	.000
	N	134	133	132	133	134	132	133
Growth	Pearson Corr.	.231**ˆ	.419**	.393**	-.046	.252**	1	.119
	Sig.	.008	.000	.000	.596	.004		.174
	N	133	132	131	133	132	133	132
Friends & Family	Pearson Corr.	.214*ˆ	.362**	.256**	.313**	.395**	.119	1
	Sig.	.013	.000	.003	.000	.000	.174	
	N	134	134	133	133	133	132	134

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

^. Point biserial correlation.

Regression of cognitive shift predicting satisfaction. It was hypothesized that cognitive shift would predict satisfaction with one's handling of issues related to a reported stressful event. Results of evaluation of assumptions indicated that no steps were required to reduce skewness, outliers, improve normality, linearity or any homoscedasticity. There were two cases with missing data, n=134. Casewise diagnostics set at 3 standard deviations indicated 2 extreme cases, but this fell within acceptable limits for a reasonably accurate model given the general rule of thumb that it is reasonable for 5% of cases to be nonconforming (Field, 2009, p. 244). The covariance ratio indicated a case that might have an undue influence, but other influence statistics and Cook's D indicated that the case was not likely to have an effect. Table 30 displays the correlations between the variables, unstandardized regression coefficients (B) and intercept, standardized regression coefficients (*B),* R^2, and adjusted R^2. R for regression was significantly different from zero, $F(1, 134) = 12.42$, $p < .001$. The confidence limits, calculated at 95%, were .254 to .905.

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Table 30.

Regression results for cognitive shift predicting satisfaction.

	B	β	R^2	Adjusted R^2
Constant	3.857			
Cognitive Shift	.579	.293	.086	.079

Regression of cognitive shift predicting future coping efficacy. It was hypothesized that cognitive shift would predict future coping efficacy. Results of evaluation of assumptions indicated that no steps were required to reduce skewness, outliers, improve normality, linearity or any homoscedasticity. There were three cases with missing data, n=133. Casewise diagnostics set at 3 standard deviations indicated no extreme cases. The covariance ratio indicated two cases that might have an undue influence, but other influence statistics and Cook's D indicated that the cases were not likely to have an effect. Table 31 displays the correlations between the variables, unstandardized regression coefficients (B) and intercept, standardized regression coefficients (*B),* R^2, and adjusted R^2. R for regression was significantly different from zero, $F (1, 133) = 7.19$, $p < .05$. The confidence limits, calculated at 95%, were 3.374 to 3.980.

Table 31.

Regression results for cognitive shift predicting future coping.

	B	β	R^2	Adjusted R^2
Constant	3.677			
Cognitive Shift	.562	.228	.052	.045

Regression of cognitive shift predicting perceived helpfulness of friends and family. It was hypothesized that cognitive shift would predict the perceived helpfulness of family and friends. Results of evaluation of assumptions indicated that no steps were required to reduce skewness, outliers, improve normality, linearity or any homoscedasticity. There were two cases with missing data, n=134. Casewise diagnostics set at 3 standard deviations indicated no extreme cases. Influence statistics and Cook's D indicated no cases likely to have an effect on the model. Table 32 displays the correlations between the variables, unstandardized regression coefficients (B) and intercept, standardized regression coefficients (*B),* R^2, and adjusted R^2. R for regression was significantly different from zero, $F(1, 134) = 6.34$, $p < .05$. The confidence limits, calculated at 95%, were 2.169 to 2.466.

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Table 32.

Regression results for cognitive shift predicting perceived helpfulness.

	B	β	R^2	Adjusted R^2
Constant	2.317			
Cognitive Shift	.260	.214	.046	.039

Regression of cognitive shift predicting recovery. It was hypothesized that cognitive shift would predict participant's perception of recovery. Results of evaluation of assumptions indicated that no steps were required to reduce skewness, outliers, improve normality, linearity or any homoscedasticity. There were two cases with missing data, n=134. Casewise diagnostics set at 3 standard deviations indicated no extreme cases. The covariance ratio indicated one case with potentially undue influence, but other influence statistics and Cook's D indicated no cases likely to have an effect on the model. No action was taken. Table 33 displays the correlations between the variables, unstandardized regression coefficients (B) and intercept, standardized regression coefficients (*B),* R^2, and adjusted R^2. R for regression was significantly different from zero, $F(1, 134) = 33.809$, $p < .001$. The confidence limits, calculated at 95%, were 3.443 to 3.838.

Table 33.

Regression results for cognitive shift predicting recovery.

	B	β	R^2	Adjusted R^2
Constant	3.641			
Cognitive Shift	.802	.452	.204	.198

Regression of cognitive shift with growth. The qualitative analysis indicated that perception of growth might be a natural outcome of a person having experienced cognitive shift. Therefore, it was hypothesized that engaging in cognitive shift would make one more likely to experience post-event growth. Results of evaluation of assumptions indicated that no steps were required to reduce skewness, outliers, improve normality, linearity or any homoscedasticity. There were three cases with missing data, n=133. Casewise diagnostics set at 3 standard deviations indicated no extreme cases. The covariance ratio indicated three cases with potentially undue influence, but other influence statistics and Cook's D indicated no cases likely to have an effect on the model. No action was taken. Table 34 displays the correlations between the variables, unstandardized regression coefficients (B) and intercept, standardized regression coefficients (*B),* R^2, and adjusted R^2. R for regression was significantly different from zero, $F (1, 133) = 7.354$, $p < .05$. The confidence limits, calculated at 95%, were 3.595 to 4.082.

Table 34.

Regression results for cognitive shift predicting growth.

	B	β	R^2	Adjusted R^2
Constant	3.839			
Cognitive Shift	.457	.231	.053	.046

CHAPTER 5

DISCUSSION

We began the investigation with the goal of gaining a better understanding of what cognitive shift is, how it fits into an overall adaptive coping structure, and whether it offers important insights for research and interventions. Mixed methods were used to analyze available data that recounted participants' most stressful life experiences. Qualitative analysis included transcription, categorization of event types, and a combination of theory-driven and data-driven coding in order to develop a model of cognitive shift. Transcripts were coded numerically for cognitive shift group membership, as well as for contextual variables considered partial determinants of the likelihood of cognitive shift. Statistical analysis was used to further triangulate the meaning and implications of cognitive shift. At the study's outset, general hypotheses were generated based on our best current understanding of the literature and what cognitive shift was likely to be. The qualitative analysis was expected to produce insights that would allow for more specific and targeted hypotheses.

The Qualitative Results and Discussion section provides detail about the investigation and operationalization of cognitive shift in the transcripts. The resulting variable representing cognitive shift for statistical analysis was a binary variable indicating, for each participant in the study, whether the transcript described a cognitive shift or not. Correlations helped to determine whether the hypothesized relationships between disposition and cognitive shift held true. In addition to the original hypothesized

relationships, self-compassion and agency were added, based on the qualitative review. Post-qualitative analysis, it was believed that negative reactivity would have no relationship to cognitive shift. The hypotheses held, with one exception. Only agency produced a surprising result, having only approached significance in a main effects analysis, yet a very meaningful relationship with cognitive shift when interacting with early adversity. The agency factor consists of variables representing purpose in life, personal mastery, and trait hope – goal orientation.

Interaction Effects

The qualitative analysis indicated the early adversity might alter the way in which a person processes coping-related information. To test this theory, each dispositional trait was tested in an interaction model with early adversity predicting cognitive shift group membership. In no model did early adversity bear a direct relationship to cognitive shift. However, early adversity had a moderating effect on the relationship between disposition and cognitive shift. Whereas agency alone previously bore a marginal relationship to cognitive shift, adding early adversity to the model allowed interaction effects to be detected. People with more native agency (characterized by purpose in life, goal orientation, and personal mastery) and a history of significant early adversity are more likely to engage cognitive shift to deal with stress than agency-predisposed people who report no childhood adversity. This makes sense, when considered against conventional wisdom that people who experience no prior adversity are less equipped to handle it when it occurs, while people who have had practice with negative events can be more

responsive and proactive. Trauma literature, of course, informs us that high intensity adversity can impair a person cognitively (Kent, Davis, Stark, & Stewart, 2011). However, these findings indicate that certain dispositions not only buffer a person against the full brunt of potentially traumatic events, but may also provide a mechanism for making sense of, or organizing, adversity. In terms of cognitive shift, the positive personality attributes influence cognitive shift the most when early adversity is present. More research is needed to determine whether these effects are replicated in other samples.

The interaction effects of disposition and early adversity, as described above, held true for self-compassion, openness, hope, conscientiousness, and agency. These dispositions are generally considered to be positive personality attributes and are collinear. While each dispositional construct is intended to capture different, though positive, aspects of personality, the collinearity, similarity of interaction effects, and a close reading of the items measuring the constructs would tend to indicate a commonality between the constructs as they relate to early adversity and cognitive shift. All reflect a certain complexity, self-awareness and flexibility of mind that is being captured by the interaction effects. A person with these attributes is more likely to be able to speak of their personal hardships and juxtapose those with their personal strengths. This skill is likely to fall within that realm of intelligence often described as either emotional or social

intelligence, meaning that people with this level of complexity and flexibility can find meaning in adversity and use that meaning to find a more resilient path. The social aspect of healing and meaning making was found over and again in the recovery narratives of those experiencing cognitive shift.

The interaction effect between early adversity and positive disposition is arguably the most important finding from the current study. Its implications are that these positive traits provide both buffer and pathway for meaning making when one has suffered great adversity. It must be made clear that, although the interaction indicates greater probability of cognitive shift with greater early adversity and positive disposition, this does not in any way support the value of trauma or adversity or imply that some people are so hardy that they need not be protected. Any discussion of these findings should be clear on that point.

Because the dispositional variables were collinear, an exploratory logistic regression was performed to test whether any of the variables provided unique variance in a direct effects analysis. Conscientiousness bore a significant relationship to cognitive shift in this model, indicating that it absorbed much of the variance; self-compassion also approached significance. Because the conscientiousness factor is comprised of attentional control, activation control, inhibitory control, and the NEO conscientiousness scale, this result might indicate that these various forms of self-control characterize the complexity, self-awareness and flexibility of mind that is expressed in the interaction effects. Self-control as a primary attribute of those able to engage cognitive shift is

consistent with the qualitative findings, which indicated that a self-conscious dialogue amongst thoughts, emotions, goals and events was needed to adapt to changing circumstances. Self-control could imply a more mindful approach to resolving issues.

Context Matters

The qualitative analysis produced codes related to contextual factors believed to be related to cognitive shift; these were scored for use in statistical analysis. A logistic regression indicated that a model including variables for life disruption, event chronicity, years since event occurred, type of event, and self-relevance of the event (i.e., context factors) correctly predicted whether a transcript would have described cognitive shift in the process of adaptive coping 71.9% of the time. This result, and related statistics, indicates that context matters. Context, as used here, is not merely of the objective variety (e.g., type of event), but also refers to how circumstances are internalized by the person (e.g., are the issues a threat to a person's self-identity or a source of great disruption). This result suggests that the qualitative analysis uncovered valuable insights into context-related factors that are keys in determining whether conditions are present for cognitive shift.

Triangulating Meaning

The study used resilience-related outcomes to further triangulate the meaning of cognitive shift. It was expected that a simple correlational analysis would demonstrate that cognitive shift correlated well with recovery, satisfaction with handling of issues, perceived helpfulness of family and friends, future coping efficacy, and growth; however,

that it should not correlate with sustainability since the ability to sustain meaningful activities would suggest that an event was not disruptive enough to require a cognitive shift. These hypotheses held up under testing. In addition, regressions were run to test cognitive shift's predictiveness of resilience-related outcomes. The relationships held up in this scenario, as well. These results provide some evidence that the cognitive shift variable is operating as expected in statistical analyses. Further, these results support the qualitative findings about the nature of cognitive shift and its role in the adaptive coping meta-process.

Limitations

The current study had certain limitations. A primary issue is that there is no experimental design, which means that no proper inference about causation can be made from these results. A second limitation is that of researcher bias in the qualitative process, most notably the belief that a construct was present and discoverable within the narrative text. Efforts were made at every step of the qualitative process to minimize the effects of researcher bias, as detailed in the Methods section and Figure 2. The resilience-related outcomes appeared as structured questions within the interviews used to code for cognitive shift. Though the coding team was blind to exact answers on a Likert scale, the open text explanations following questions were a necessary part of the narrative text; therefore, these open answers were visible and held the potential for contaminating the results. However, the statistical analyses included variables from other instruments used in the parent study. The coding team was completely blind to these

variables. The aggregate of the statistical analyses comes to a remarkably similar conclusion, which is that the coded cognitive shift variable operates to represent a change in coping facilitated by the types of dispositions that are related to the ability to mindfully and flexibly change when needed. Further, cognitive shift group membership is associated with results that are generally perceived as positive and typical of resilience. It lends credibility to the research that triangulation on the meaning of cognitive shift was built on the foundation of multiple instruments administered at different points in time by researchers unrelated to the coding team.

Future Directions

Though the information obtained through this study has been valuable in helping us to understand resilience, there are several research directions that need further exploration. The interaction effects uncovered by this study could be study in a more finely-grained manner. A study with a sufficient sample endorsing emotional, physical and sexual abuse would assist us in determining whether the interaction effects only hold true between positive disposition and certain kinds of abuse or neglect. This would have implications for any attempts to intervene in the lives of those reporting adversity, which is an area currently being explored by the National Institutes of Aging. Indeed, interventions that promote the sort of complexity, self-awareness, and flexibility of mind captured by the positive disposition variables would be a natural extension of this study. An intervention aimed at cultivating these dispositional qualities to the greatest possible extent might provide an experimental design in which causation could be established and

mechanisms confirmed. An intervention that seeks to assist people with a medical condition, for example, that is associated with early adversity could provide an opportunity to measure success against both subjective goals such as affective states and physical markers such as inflammation, pain or stress hormone levels. Qualitative interviews before, immediately after, and then a number of months after would be a desirable means to gain participant perspectives on their early and current personal history, affective state, general worldview, expectations for and the ultimate efficacy of the intervention. The information provided by such interviews could assist researchers in identifying additional factors that motivate or hinder an individual's pursuit of wellbeing.

Future efforts should include measuring cognitive shift according to trajectory change. It is possible that the effects detected in this study might differ when the cognitive shift variable is coded to reflect the differing levels of cognitive shift. It is important to determine how supported the qualitative findings are in noting that people experiencing early adversity are more likely to have micro-shifts. If supported, the finding may indicate that psychoeducation interventions are less likely to succeed than those targeting context and social support because the small trajectory changes observed with micro-shifts tend to occur when the person under stress is able to identify one discrete aspect of his or her life to improve. General education interventions may not provide specific enough direction to help define those areas for small change. Replication of the current study with a more nuanced cognitive shift variable may be a starting point.

In addition to the foregoing future opportunities, a larger sample for study is suggested in order to perform more sophisticated analyses of the operation of cognitive shift in a coping model. For example, it is possible that cognitive shift operates as a partial mediator in the coping process but the structural equation modeling to perform the analysis needs sufficient power. This is another analysis that could refine our understanding of how cognitive shift operates in a meta-coping model and, more specifically, how that model could inform clinical interventions.

Summary

In summary, a mixed methods analysis produced evidence that cognitive shift is characterized by reorientation of attention preceded by the ability to recognize event boundaries and a sense of agency in actualizing change. Mixed methods supported the proposition that positive disposition (e.g., trait hope, self-compassion) was more poignant than negatively valenced disposition (e.g., negative reactivity) to the activation of cognitive shift. Further, it supported the interaction effects of early adversity and positively valenced dispositions in predicting cognitive shift. Context, both objective (e.g., chronicity) and as perceived by the person experiencing an event (e.g., self-relevance), was a strong predictor of one's likelihood of cognitive shift when faced with stressful events. Cognitive shift was identified in a slight majority of stressful event narratives. The presence of cognitive shift in a large number of accounts indicates that it

may be a useful construct for future research. At present, there is preliminary evidence that cognitive shift is a measurable, operationalizable construct that adds value to existing research. Further, the present research yielded valuable insights into the role of early adversity and positive disposition on a person's present ability to cope with stressors.

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APPENDIX A

TRANSCRIPTION PROTOCOL

SOFTWARE DOWNLOAD

Express Scribe

Express Scribe is professional, open source, audio player software for PC or Mac designed to assist the transcription of audio recordings. A typist can install it on their computer and control audio playback using their keyboard (with 'hot' keys). This transcribing software also offers valuable features for typists including variable speed playback, multi-channel control, playing video, file management, and more. The free version of Express Scribe supports most common audio formats including wav, mp3, wma, aif and dct and does not expire.

Downloading Express Scribe

If you are using a lab computer that does not already have Express Scribe software loaded, or on your own computer that is connected to the R Drive via VPN access, you can download Express Scribe from the following website (this is the website of the publisher of the software): http://www.nch.com.au/scribe/index.html

System Requirements

- Works on Windows 7 XP and Windows Vista
- Mac OS X - 10.3 or above
- See Windows 98 and Windows 2000 for earlier versions
- Sound Card or Integrated Sound Support

STEP BY STEP INSTRUCTIONS

Open Audio in Express Scribe

1- Locate your participant audio file. The audio recordings are stored in two different places, and you may have to search both files to find your participant file.

R Drive/Data/Raw/Digital Phone Recordings/Recording Data

R Drive/Data/Raw/Digital Phone Recordings/Audio Tape

Recording_Data

2- Right click on the audio file name, select "Transcribe with Express Scribe"
3- Audio file will appear in Express Scribe Software

Open Template

1- Go to back to R Drive/Data/Raw/Digital Phone Recordings
2- Open folder called "Audio Transcription"
3- Open Microsoft Word document called "Audio Transcription Template." This document contains (1) the formatting required by the protocol and (2) the text read by the interviewer, though not any ad hoc probing (you will need to transcribe this).
4- Before beginning the transcription, go to the menu and choose "Save As" from the drop down. Save the document under the same name as the audio recording (e.g., 1999_09.08.2010.doc = Participant #1999 interviewed on date September 8, 2010).

Open Tracking Spreadsheet

5- Go to back to R Drive/Data/Raw/Digital Phone Recordings
6- Open folder called "Audio Transcription"
7- Open excel spreadsheet called "Transcription_Log"

8- **ParticipantID** column: write in participant's ID number
9- **AudioFileName**: write the name of the audio file EXACTLY as it was named (contains participant ID and date of phone interview)
10- **Transcriptionist RA_1**: If you are the first transcriptionist on this file, place your initials here (note that if you are the second transcriptionist, you use the column designated with "_2").
11- **Date of Entry_1**: If you are the first transcriptionist, enter the date you began work (note that if you are the second transcriptionist, you use the column designated with "_2").
12- **Clocktime started_1**: If you are the first transcriptionist, enter the exact time right before you press the play button on Express Scribe (note that if you are the second transcriptionist, you use the column designated with "_2").

Start Transcribing

1- Go to the Express Scribe window and press the Play button, designated by an ▶
2- Toggle back to the Microsoft Word window and begin transcription, following the protocol for formatting
    a. If the recording is playing too fast, you can slow it down or otherwise control the functionality with the Keyboard and Hot Key Control:
        - To play at fast speed, press and hold down F3
        - To stop the recording, press and hold down F4
        - To rewind the recording, press and hold down F7
        - To fast forward the recording, press and hold down F8
        - To play the recording, press and hold down F9
        - To play the at real speed, press and hold down F10
        - ***To play at slow speed, press and hold down F11***
        - To move directly to the start, press the Home key
        - To move directly to the end, press the End key
3- When transcription is complete, return to the spreadsheet and document the following:
    a. **Clocktime ended_1**: If you are the first transcriptionist, document the time you pressed the stop button or the tape ended (note that if you are the second transcriptionist, you use the column designated with "_2").
    b. **Audiotime_1**: If you are the first transcriptionist, enter the amount of running time of the audio recording that you actually transcribed. If you stopped early, this will not be the full length of the tape. Note that if you are the second transcriptionist, you use the column designated with "_2".
    c. Please take the time to note any issues, including file quality, which may affect the speed, or quality of the transcription in the column designated for open-ended notes.

TEXT FORMATTING

General Instructions

The **transcriber** shall transcribe all individual interviews using the following formatting:

1. Arial 11-point face-font
2. One-inch top, bottom, right, and left margins
3. All text shall begin at the left-hand margin (no indents)

4. Entire document shall be left justified

Labeling for Individual Interview Transcripts

Individual interview transcript shall include the following labeling information left justified at the top of the document:

Example:
Participant ID:
Date of Interview:
Phase:
Site/ Location:
Transcriber:

The transcriber shall insert a single blank line between the file labeling information and the actual interview transcription. A double pound sign (##) shall **precede and follow** each participant identification label (i.e., **Source ID**).

A single hard return shall be inserted immediately after the Source ID. The individual's comment/response shall begin on the next line.

Example:
Participant ID: 1999
Date of Interview: 11/14/2008
Phase: PI
Site/ Location: CSB
Transcriber: John Smith

##RA##

OK, before we begin the interview itself, I'd like to confirm that you have read and signed the informed consent form, that you understand that your participation in this study is entirely voluntary, that you may refuse to answer any questions, and that you may withdraw from the study at anytime.

##PI1999##

Yes, I had read it and understand this.

##RA##

Do you have questions before we proceed?

##

For a videotaped interview, the Labeling may appear as follows:

Example:
Participant ID: 1999
Date of Interview: 11/14/2008
Phase: Videotaped Lab
Site/ Location: POLY
Transcriber: John Smith

##RA##

OK, before we begin the interview itself, I'd like to confirm that you have read and signed the informed consent form, that you understand that your participation in this study is entirely voluntary, that you may refuse to answer any questions, and that you may withdraw from the study at anytime.

##PI1999##

Yes, I had read it and understand this.

##RA##

Do you have questions before we proceed?

Designating End of Interview

The transcriber shall indicate when the interview session has reached completion by typing END OF INTERVIEW in uppercase letters on the last line of the transcript along with information regarding the total audio running time associated with the interview in minutes and seconds (mm:ss).

Example:
##RA##

Is there anything else that you would like to add?

##PI1999##

Nope, I think that about covers it.

##RA##

Well, thanks for taking the time to talk with me today. I really appreciate it.

END OF INTERVIEW (15:32)

SOURCE LABELING

Interviews

Source IDs shall begin with the alpha character that designates the data collection phase of study followed by the individual's four-digit identification number (e.g., PI1999 = Phone Interview interviewee #1999).

The interviewers will be designated as "RA" only (e.g., ##RA##)

Example:
Phase designators for interviews are:
PI = phone interviews
LAB = videotaped lab

Example:
Site/ Location for videotaped interviews are:
CSB = Community Services Building
WEST = ASU West lab
POLY = ASU Polytechnic lab

All phone interviews will be designated with a site/ location of CSB.

CONTENT

Much of the recorded interviews involve structured questions and answers. The Audio Transcription Template already contains the structured questions asked by the interviewer. Structured participant answers are designated with answer choices in parentheses. Please highlight the entire parenthetical area, delete, and replace with the correct structured answer.

All open-ended questions and answers are identified by the scripted question in bold text. Any ad hoc probing by the interviewer and open-ended answers by participant shall be transcribed verbatim (i.e., recorded word for word, exactly as said), including any nonverbal or background sounds (e.g., laughter, sighs, coughs, claps, snaps fingers, pen clicking, and car horn).

- Nonverbal sounds shall be typed in parentheses, for example, (short sharp laugh), (group laughter), (police siren in background).
- If interviewers or interviewees mispronounce words, these words shall be transcribed as the individual said them.
- The transcript shall not be "cleaned up" by removing foul language, slang, grammatical errors, or misuse of words or concepts.
- If an incorrect or unexpected pronunciation results in difficulties with comprehension of the text, the correct word shall be typed in square brackets. A forward slash shall be placed immediately behind the open square bracket and another in front of the closed square bracket.

Example:
I thought that was pretty pacific [/specific/], but they disagreed.

- The spelling of key words, blended or compound words, common phrases, and identifiers shall be standardized across all individual and focus group transcripts.
- Enunciated reductions (e.g., *betcha*, *cuz*, *'em*, *gimme*, *gotta*, *hafta*, *kinda*, *lotta*, *oughta*, *sorta*, *wanna*, *coulda*, *could've*, *couldn't*, *coudn've*, *couldna*, *woulda*, *would've*, *wouldn't*, *wouldn've*, *wouldna*, *shoulda*, *should've*, *shouldn't*, *shouldn've*, *shouldna*) plus standard contractions of *is*, *am*, *are*, *had*, *have*, *would*, and *not* . . . will be used.
- Filler words such as *hm*, *huh*, *mm*, *mhm*, *uh huh*, *um*, *mkay*, *yeah*, *yuhuh*, *nah huh*, *ugh*, *whoa*, *uh oh*, *ah*, and *ahah* shall be transcribed.
- Word or phrase repetitions shall be transcribed. If a word is cut off or truncated, a hyphen shall be inserted at the end of the last letter or audible sound (e.g., he wen- he went and did what I told him he shouldn've).

Inaudible Information

The transcriber shall identify portions of the audiotape that are inaudible or difficult to decipher. If a relatively small segment of the tape (a word or short sentence) is partially unintelligible, the transcriber shall type the phrase "inaudible" in bold, appearing in square brackets.

Example:

The process of identifying missing words in an audio taped interview of poor quality is **[inaudible].**

If a lengthy segment of the tape is inaudible, unintelligible, or is "dead air" where no one is speaking, the transcriber shall record this information in bold and in square brackets. In addition, the transcriber shall provide a time estimate for information that could not be transcribed.

Example:
[Inaudible: 2 minutes of interview missing]

Overlapping Speech

If individuals are speaking at the same time (i.e., overlapping speech) and it is not possible to distinguish what each person is saying, the transcriber shall place the phrase "cross talk" in bold and in square brackets immediately after the last identifiable speaker's text and pick up with the next audible speaker.

Example:
Turn taking may not always occur. People may simultaneously contribute to the conversation; hence, making it difficult to differentiate between one person's statement **[cross talk].** This results in loss of some information.

Pauses

If an individual pauses briefly between statements or trails off at the end of a statement, the transcriber shall use three ellipses. A brief pause is defined as a two- to five second break in speech.

Example:
Sometimes, a participant briefly loses . . . a train of thought or . . . pauses after making a poignant remark. Other times, they end their statements with a clause such as but then . . . .

If a substantial speech delay occurs at either beginning or the continuing a statement occurs (more than two or three seconds), the transcriber shall use "long pause" in parentheses.

Example:
Sometimes the individual may require additional time to construct a response. (Long pause) other times, he or she is waiting for additional instructions or probes.

Questionable Text

If the transcriber is unsure of the accuracy of a statement made by a speaker, this statement shall be placed inside parentheses and a question mark is placed in front of the open parenthesis and behind the close parenthesis.

Example:
##PI1999##

I went over to the ?(club on Avalon)? to meet with the street outreach team to talk about joining up for the study.

Sensitive Information

If an individual uses his or her own name during the discussion, the transcriber shall replace this information with the appropriate interviewee identification label/ naming convention.

Example:
##PI1999##

My family always reminds me, "B3003, think about things before you open your mouth."

#PI1999##

Hey B3003, don't feel bad; I hear the same thing from mine all the time.

If an individual provides others' names, locations, organizations, and so on, the transcriber shall enter an equal sign immediately before and after the named information. Analysts will use this labeling information to easily identify sensitive information that may require substitution.

Example:
##PI1999##

We went over to =John Doe's= house last night and we ended up going to =O'Malley's Bar= over on =22nd Street= and spending the entire night talking about the very same thing.

Interviewer Questioning

The scripted questions read by the interviewers is already transcribed in the template. There are two types of blanks you will see in the scripted questions (below), but you do not need to fill in these blanks:

1- A word appears in capital letters within parentheses. For example, (EVENT).
2- A fill in the blank is indicated. For example, _____.

However, there is one situation in which you need to transcribe the interviewer's questioning:

1- When the interviewer goes off script to do some ad hoc questioning, you need to transcribe the questioning.

STORAGE OF AUDIOTAPES

When a tape is not actively being uploaded, transcribed or reviewed, the responsible RA's shall ensure that it will be stored in a locked cabinet.

REVIEWING FOR ACCURACY

The transcriber/proofreader shall check (proofread) all transcriptions against the audiotape and revise the transcript file accordingly. The transcriber/proofreader shall adopt a three-pass-per-tape policy whereby each tape is listened to three times against the transcript before it is submitted. All transcripts shall be audited for accuracy by the interviewer who conducted the interview or by the study data manager.

SAVING TRANSCRIPTS

The transcriber shall save each transcript as an individual MS Document file with a .doc extension or a rich text file with an .rtf extension.

Individual interview transcript files shall be assigned the interview name followed by the participant ID (e.g., 1999_09.08.2010.doc = Participant #1999 interviewed on date September 8, 2010).

BACKUP TRANSCRIPT FILES

All transcript files shall be backed up on a server or external hard drive. The server/ hard drive shall not be stored in the same location as the audiotapes.

DESTROYING AUDIOTAPES

Unless a specific timeframe is designated in the research protocol for retaining of audiotapes, they will be destroyed 5 years after data analysis for the study has completed. Recycling of audiotapes shall be permitted provided that sound quality is tested and new labels are affixed to the tapes.

APPENDIX B

TRANSCRIPTION CLEANING PROTOCOL

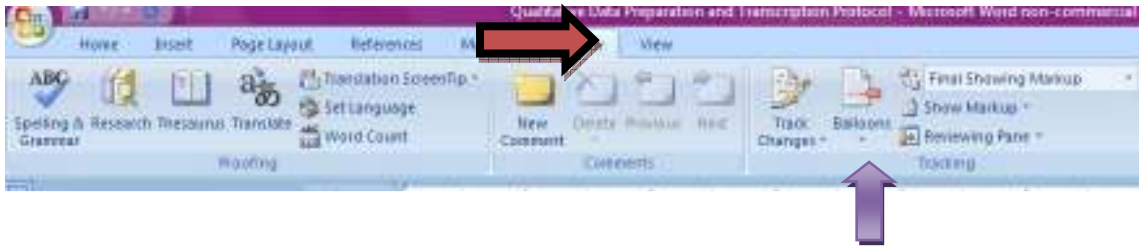
All transcriptions will be proofread against audio recordings and revised (or "cleaned") accordingly. The "cleaning RA" and the "transcription RA" must be two different RA's.

Before beginning:

- Open Transcription Log excel sheet
    - Cleaning should be done in the order the participants are listed; determine which transcript is next in line to be cleaned. Once determined, enter RA initials in the "Data CLEANING RA (initials)" column. Then, x-out of the log so other RA's can access the document.
    - To find this document, go to:
        - R Drive/Data/Raw/Digital Phone Recordings/Audio Transcription
- Open Qualitative Data Preparation and Transcription Protocol
    - RA's will use this document as a tool to guide cleaning, whenever questions may arise
    - To find both this document, go to:
        - R Drive/Data/Raw/Digital Phone Recordings/Audio Transcription
- Open completed transcript to be cleaned
    - To find this document, go to:
        - R Drive/Data/Raw/Digital Phone Recordings/Audio Transcription/Transcripts and select the transcript that needs cleaning.
- Open Express Scribe/Media Player to listen to audio recording

RA's will be using "Track Changes" in Microsoft Word to edit transcripts when necessary.

- To find these tools:
    - Click the review tab, then find the Track Changes option.



This is a great tool because it allows you to see the original text, as well as the corrections. For example:

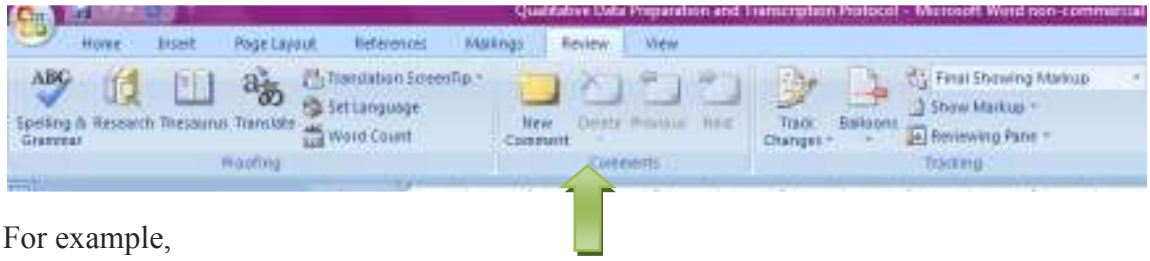
##2222##
Um…my friends were very supportive during my experience.

Once Track Changes has been selected, the cleaning process can begin.
First, verify that the transcript title is correct (exact name of audio tape), then verify that the header of the transcript is correct (including participant ID, date of interview, phase, location, and transcriber).

Then, follow along the transcript while listening to the recording, and correct the transcript when necessary. This will require rewinding, stopping, and playing at slow speed. Use the Express Scribe hot keys to do this with ease.

- To play at fast speed, press and hold down F3
- To stop the recording, press and hold down F4
- To rewind the recording, press and hold down F7
- To fast forward the recording, press and hold down F8
- To play the recording, press and hold down F9
- To play the at real speed, press and hold down F10
- ***To play at slow speed, press and hold down F11***
- To move directly to the start, press the Home key
- To move directly to the end, press the End key

If lengthy comments need to be made, RA's can highlight the text they are referencing and click new comment to write a comment in the margins.



For example,

##2222##
It was ridiculous! I was completely frustrated and didn't know what to do!

Use the Qualitative Data Preparation and Transcription Protocol as a reference guide when any questions arise. If there are questions that cannot be answered using the Transcription Protocol, contact Crys and Taylor for further direction.

Once cleaning is complete, record the cleaning date in the "date of cleaning (format: ##/##/####)" column in the Transcription Log.

(Note: do not put the date in this column until finished cleaning so that anyone looking at the transcription log will know that cleaning is in progress when only the cleaning RA's initials have been entered and not the date; date entered=cleaning completed)

Finally, open the Transcription Cleaning Log

- R Drive/Data/Raw/Digital Phone Recordings/Audio Transcription

Then, fill out each column. This includes participant ID, cleaning RA, transcription RA, amount of time spent transcribing (calculated using the clock times entered in the Transcription Log), type of errors made, and notes on errors. Make sure that the notes on the errors are very specific and clear.

Log Review:
The cleaning log shall be reviewed once per week to evaluate lab production. Trends in time spent transcribing, amount of errors, and type of errors made by each individual RA will be noted. If errors are consistently negatively affecting work production, individual RA's will need to be retrained on transcription.

Any transcript with errors affecting over 20% of the document will be flagged; the transcriber will meet with Crys and Taylor, or a designated team lead, to discuss corrections made and determine whether retraining on any aspect of the transcription process is needed.

APPENDIX C

QUANTITATIVE MEASURES CODEBOOK

General:

ID: participant identification number

From Adaptive Coping Study

Category: type of life event described in semi-structured interview

1= death
2= illness
3= abuse
4= substance use
5= multiple events

CogShift: was cognitive shift present in narrative for this case?

0= no
1= yes

Chronicity: was event described of a chronic nature (if not, it was acute)

0= acute
1= chronic

YrsSinceEvt: how many years had elapsed between event and date of interview?

1= within 1 year of interview
2= within past 5 years
3= 5 – 10 years ago
4= 10 – 20 years ago
5= 20+ years ago
6= event occurred in childhood (participant was less than 18 years old)

EvtDuration: over what period of time did event occur?

1= brief; one month or less
2= 1- 6 months
3= 6 months to 1 year
4= 1 – 5 years
5= 5+ years

SelfRelevance: how self-relevant was event for participant?

1= not relevant at all
2= only a little relevant
3= moderately relevant
4= mostly relevant
5= centrally relevant

Disruption: how disruptive was event for participant?

1= not disruptive
2= only a little disruptive
3= moderately disruptive
4= mostly disruptive
5= totally disruptive

FROM AS U LIVE QUESTIONNAIRE 1:
Personal Identity, Diversity, Living Situation and Community

age: Specify: _____

gender: Participant gender
0= female
1= male

edu: What is the highest grade or year in school that you have completed?

1= Completed 3 years or less of school

2= Completed 4 to 6 years of school

3= Completed more than 6 years of school but did not finish high school or receive a GED

4= Got a high school diploma or GED

5= Trade/vocational/technical school certificate

6= Had some college

7= College degree

8= Some graduate school

9= Graduate/Professional degree (e.g. MA, PhD, MD, JD)

FROM AS U LIVE QUESTIONNAIRE 3:
Your family and social networks when you were a child

ctq_COMPOSITE: the composite variable for the ctq items from Questionnaire 3. Example items are:

ctq14: I believe that I was physically abused.
1= Never true
2= Rarely true
3= Sometimes true
4= Often true
5= Very often true

ctq19: Someone threatened to hurt me or tell lies about me unless I did something sexual with them.
1= Never true
2= Rarely true
3= Sometimes true
4= Often true
5= Very often true

ctq20: Someone tried to make me do sexual things or watch sexual things.

1= Never true
2= Rarely true
3= Sometimes true
4= Often true
5= Very often true

ctq21: Someone molested me.

1= Never true
2= Rarely true
3= Sometimes true
4= Often true
5= Very often true

ctq22: I believe I was emotionally abused.

1= Never true
2= Rarely true
3= Sometimes true
4= Often true
5= Very often true

ctq24: I believe I was sexually abused.

1= Never true
2= Rarely true
3= Sometimes true
4= Often true
5= Very often true

FROM AS U LIVE QUESTIONNAIRE 4: Who are you now?

AS U Live Personality Factors from Confirmatory Factor Analysis from Figure 3:

negr_f: Negative Reactivity Personality Factor

The negative reactivity factor is a composite of the following scales:

- Neuroticism – Big Five Personality
- BIS
- Affect Intensity - Calm

surg_f: Surgency (Extraversion) Personality Factor

The surgency factor is a composite of the following scales:

- Extraversion – Big Five Personality
- BAS
- Affect Intensity – Positive Reactive

cons_f: Conscientiousness Personality Factor

The conscientiousness factor is a composite of the following scales:

- Conscientiousness – Big Five Personality
- Activation Control
- Attentional Control
- Inhibitory Control

agen_f: Agency Personality Factor

The agency factor is a composite of the following scales:

- Personal Mastery
- Purpose in Life
- Revised Trait Hope – Goal Orientation

open_f: Openness Personality Factor

The openness factor is a composite of the following scales:

- Openness to Experience – Big Five Personality
- Ego Resilience
- Emotion Approach Coping

Other Scales of Interest:

scomp: Self Compassion Scale – self-kindness & mindfulness subscales

thope: Trait hope
thopep: Trait hope, pathways subscale
thopea: Trait hope, agency subscale

From Phone Interview

TSS: Traumatic Stress Schedule

Semi-Structured Interview Items

recvr_rev: To what extent would you say you have recovered from the experience and resolved problems that arose as a result?
1= Not recovered/ resolved at all
2= Mostly not recovered/ resolved
3= Somewhat recovered/ resolved
4= Mostly recovered/ resolved
5= Fully recovered /resolved

fafr_rev: In thinking about how you coped with this experience, were your family and friend's reaction helpful to you, not helpful, neither helpful nor unhelpful, both helpful and unhelpful?
1= Unhelpful
2= Neither helpful nor unhelpful; Both helpful and unhelpful
3= Helpful

copeff3_rev: Thinking about how well you handled or are handling the problems that arose from this experience, would you say that you were very satisfied, somewhat satisfied, neither satisfied nor dissatisfied, somewhat dissatisfied, or very dissatisfied with how you handled or are handing the experience?
1= Very dissatisfied
2= Somewhat dissatisfied
3= Neither satisfied nor dissatisfied
4= Somewhat satisfied
5= Very satisfied

copeff4_rev: If you had a similar experience again, how certain are you that you would be able to cope well with its negative aspects? Would you say that you are very certain, fairly certain, in

some ways certain and in some ways uncertain, fairly uncertain, or very uncertain you would be able to cope?

1= Very uncertain
2= Fairly uncertain
3= In some ways certain, in some ways uncertain
4= Fairly certain
5= Very certain

sustn_rev: To what extent were you able to continue to pursue your interests, goals, and purpose—those activities that give your life meaning—during this experience? Were you …

1= Not able to continue at all
2= Mostly not able to continue
3= Somewhat able to continue
4= Mostly able to continue
5= Fully able to continue

growth: To what extent were you able to learn from and grow stronger from this experience?

1= Not at all
2= A little bit
3= Somewhat
4= Quite a bit
5= Extremely