Can Researchers Agree on Levels of Resilience

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Abstract

Resilience has been challenging to define, though it is intuitively apparent in many ways as the capacity to bounce back from adversity. We set out to determine if we could agree on ratings resilience based on our collected life story interviews. After reviewing our life stories, we settled on five ratings of resilience based upon a water/swimming metaphor. At level 1, the person sinks to the bottom and remains there. At level 2, the person is not sitting at the bottom but has yet to reach the surface. At level 3, the person is treading water. They are working hard to stay afloat but not making significant progress in altering their overall situation. At level 4, they're swimming toward shore, toward a more favorable environment where they can thrive. At level 5, they've managed to climb out of the water and change their circumstances. Their resilience allows them to overcome challenges and seek better surroundings. We reviewed the life story interviews of thirty-five participants with an eye to these categories. We also used ChatGPT to determine if it could perform better than us. For 35 participants with five ratings and three raters, we had a percent overall agreement of 84.00% with a free-marginal kappa of 0.80 (95% CI for free-marginal kappa; 0.66 to 0.94). The fixed-marginal kappa was 0.78, with a 95% CI of 0.62 to 0.93. ChatGPT had a percent overall agreement of 71.33% with a free-marginal kappa of 0.65 (95% CI for free-marginal kappa was 0.50 to 0.79: fixed-marginal kappa of 0.61 (95% CI for fixed-marginal kappa of 0.51 to 0.71. Cohen suggested the Kappa result be interpreted as follows: values ≤ 0 as indicating no agreement and 0.01–0.20 as none to slight, 0.21–0.40 as fair, 0.41–0.60 as moderate, 0.61–0.80 as substantial, and 0.81–1.00 as almost perfect agreement (Cohen, 1960). All results were statistically significant at p < 0.01. The Ohio State Resilience Scale did not correlate with our ratings, suggesting that people's assessments of their level of resilience do not match those of clinically trained observers.

1. Introduction

The American Psychological Association (APA) dictionary of Psychology defines resilience as the "process and outcome of successfully adapting to difficult or challenging life experiences, especially through mental, emotional, and behavioral flexibility and the adjustment to external and internal demands." Several factors contribute to how well people adapt to adversities, including how individuals view and engage with the world, the availability and quality of social resources, and specific coping strategies. The ability to resist adverse outcomes after exposure to trauma (resilience) is a thriving field of study. "Yet ongoing debate persists regarding definitions of resilience [1,2].

"Exposure to adversity (e.g., poverty, bereavement) is a robust predictor of disruptions in psychological functioning. However, people vary in their responses to adversity; some experience severe long-term disruptions, while others experience minimal disruptions or even improvements. We

refer to the latter outcomes faring better than expected given adversity as psychological resilience … [P]sychology's understanding of resilience is incomplete for two reasons: (a)We lack conceptual clarity, and (b) two approaches to resilience the stress and coping approach and the emotion and emotion-regulation approach have limitations and are relatively isolated from one another. Understanding resilience becomes essential, given that adversity is an unavoidable fact of human life. Over 70% of respondents in a sample of 68,894 people reported at least one traumatic event in their lifetime, with nearly a third reporting exposure to four or more traumatic events This high rate of exposure is even more profound when other adverse experiences are considered, including chronic childhood maltreatment, economic marginalization, racism and climate change (Doherty & Clayton, 2011). The neurotoxic effects of these experiences range from compromised neurocompetence, psychopathology including PTSD, and depression, to adverse physical effects [3-10].

Not all individuals exposed to trauma and adversity experience adverse outcomes. The remarkable ability of some individuals to resist adverse outcomes or to demonstrate resilience after highly adverse exposures has become a major field of study. Impediments to the success of this research include a lack of consensus on the definition and significant variation in operationalization of the construct of resilience, discrepancies and confusion around trait vs. dynamic conceptualization, and methodological limitations that limit inferences of causality and generalizability [2-11].

Troy et al. pose six key questions in the study of resilience, the first centering on the level of analysis for resilience. Troy et al. provide a model for how to consider resilience that we will endeavor to follow in our Methods section [12].

Psychological research on resilience has often focused on individuals, but attention to groups and communities is growing. Although these levels affect each other (Masten & Motti-Stefanidi, 2020), resilience at one level does not imply resilience at the other (Thus, researchers have increasingly conceptualized resilience as a dynamic interplay among individual, family, and community levels [13-16].

Troy et al.'s second question concerns the role of adversity in resilience. Sometimes, resilience is modeled as a stable trait that can be measured despite adversity. For others, resilience occurs only in response to adversity; some adversity must be experienced to observe resilience. Another dichotomy lies in whether we define adversity in objective terms (e.g., events such as poverty, disaster, and bereavement versus individuals' appraisals of how adverse an event was. Depictions of adversity can also vary by intensity, timing, duration, controllability, globality, threat, and deprivation and across types of events (e.g., grief, trauma. We must be clear about these distinctions and whether they matter [13-20].

Troy et al.'s third question focuses on the nature of resilience. Resilience can be considered a factor, or a relatively stable trait, that exists both in the presence and absence of adversity. For example, trait resilience is the stable predisposition to adapt to change. Resilience can be considered a process, such as the capacity or resources deployed in response to adversity, allowing individuals to withstand ongoing demands and maintain functioning. Resilience processes can include social (e.g., social support) and psychological (e.g., cognitive and behavioral strategies, including coping and emotion regulation) aspects. Finally, resilience can be considered an outcome, such as maintaining or high functioning following adversity. In turn, functioning can be indicated in a variety of ways. At the level of the individual, indices of resilience can include well-being, psychological health, levels of psychopathology, number of symptoms, presence of diagnoses, academic, occupational, or social achievements, or accomplishing developmental milestones [16-22].

Resilience established by one indicator (e.g., academic achievement) does not necessarily imply resilience established by another indicator (e.g., psychological health) (Infurna, 2020), and it is thus vital to be clear about the functioning gauge that is used [23].

Troy et al.'s questions four through six concerns how we determine that an individual, group, or community is resilient. Question four asks what criterion for functioning is applied to assess resilience. At what point is an individual considered resilient? We could set a criterion as an absolute point such that scoring above it is resilient and below it is not. Alternatively, resilience could be conceptualized as high functioning relative to others who experienced similar adversity or relative to others who did not experience adversity, relative to oneself (e.g., returning to one's pre-adversity levels of functioning, or relative to expectations given a particular cultural context and a particular adversity. We can also conceptualize resilience as categorical (e.g., resilient versus not resilient) or continuous [24-28].

Troy et al.'s questions five and six regard timing. At what time point relative to adversity onset does resilience emerge? Some believe resilience is observable at any point. For those who see resilience varying in time, does it emerge during or immediately after encountering adversi? Or could it appear years or decades after experiencing adversity. How long must resilience indicators be present for someone to be considered resilient? The range is from a brief moment to years or even decades [11-26].

2. Methods
2.1. Conceptual Approach to Resilience
All individuals are embedded within groups, communities, and cultural contexts that influence individual experiences and resilience. In keeping with Troy et al., we defined adversity as circumstances or events that many people in each cultural context would expect to tax or exceed their resources and that have the potential to disrupt functioning. We focused on circumstances and events expected to disrupt functioning to a moderate extent and at least for a moderate amount of time (i.e., lasting a minimum of weeks), which are all included in Selye's life stress inventory (Selye, 2013). This definition of adversity (a) excludes events and circumstances that are unlikely to affect functioning (e.g., a one-time, transient, mild event); (b) includes a wide range of circumstances and events (e.g., poverty, job loss, divorce, terrorist attacks, or global events such as the COVID-19 pandemic), including those that might not be considered adverse for all people and in all cultural contexts (e.g., a wedding, a move); (c) avoids concerns about circularity (i.e., adversity is what adversely affects a person) by using a consensus criterion rather than an individual-based subjective criterion; and (d) avoids the difficulty of establishing an entirely objective criterion by using people's appraisals instead (i.e., what most people expect to disrupt functioning potentially). Our broad definition of adversity allows for examining resilience across various adverse contexts. We also believed that adversity features (e.g., intensity, timing, duration, controllability, and globality)

shape resilience and thus need to be considered. We focused on resilience as a dynamic outcome that changed over time and were interested in factors that predict resilience outcomes. We concentrated on psychological health outcomes, which we characterize comprehensively along the dimensions of ill-being (e.g., depression) and well-being (e.g., life satisfaction; happiness). Thus, resilience can encompass a lack of ill-being and a presence of well-being. We assumed people fall along a continuum of resilience, which we can, for analysis, segregate into discrete levels [29].

2.2. Researcher Reflexivity

We consisted of a senior researcher who identifies as Indigenous and has worked with and within Indigenous communities for 50 years, a non-Indigenous social worker-researcher who has worked with and within Indigenous communities for 20 years, and two non-Indigenous medical students. We were well aware of the tremendous impact on Indigenous people of inter-generational trauma, residential schools, adoption, and loss of land.

2.3. Participants

The University of Maine Institutional Review Board granted ethics approval. We circulated approved flyers to recruit participants at the places where we worked. We sent flyers to colleagues to circulate as they saw fit. To avoid the appearance of coercion, we did not actively recruit any of our own patients. Interested people contacted us via telephone, text message, or email. We spoke to them, explained the study, and invited their participation. Informed consent was then obtained. Given the proximity to the Covid-19 epidemic and the tremendous distances between clinics and their patients in Maine, many interviews were conducted via a HIPAA-compliant Zoom platform. Transcripts were generated by an Artificial Intelligence platform (Trint, Toronto, Canada) and provided to participants to edit and approve. The Ohio State Resilience Scale was administered via email or interview. Participants were given a $15 Starbucks Gift Card on completion of the interview and a copy of the interview to use as they wished. The average age of participants was 37 (range 25 – 80). Ten were women, and twenty-five were men. Five participants lived in the Hudson River Valley area of New York State, and the remainder lived in the State of Maine. Twenty-seven participants identified as Indigenous, while eight were of European descent.

2.4. Methodology

We conducted life story interviews as we have done in previous research. These interviews consisted of 1 to 3 guided narrative interviews with questions about the chapters of a person's life, high points, turning points, low points, proud moments, moments of regret, and more. Interviews lasted 1 to 3 hours and were conducted in person or held over multiple Zoom sessions that were recorded and transcribed using an artificial intelligence platform called Trint (Toronto, Ontario) [30].

We reviewed transcripts of interviews using an inductive and team-based thematic analysis approach that involved searching for patterns and themes within the interviews Our process began with bracketing; we discussed how our pre-existing biases and identities could influence coding. The three coders independently reviewed the transcripts of each interview. Each coder generated a summary memo for each interview with in vivo codes, partial transcriptions (e.g., salient quotes), and memos. We used these memos as a springboard for discussing how to conceptualize and rate resilience across the lifespan. We arrived at five levels of resilience upon which we could all agree. We developed a five-point scale, with one being the least and five being the most resilient pattern. We found a water metaphor helpful in conceptualizing these five levels of resilience. Resilience in an ever-changing world can be likened to navigating in water. Adversity tosses us into the water. On a scale from 1 to 5, we can understand resilience as our ability to thrive in the water where we find ourselves and even swim to shore. Here are our levels [31].

Level 1: At this level, the person sinks to the bottom and remains there. They are making no effort to change their circumstances and stay stagnant.
Level 2: At this level, the person is not sitting at the bottom but has yet to reach the surface. They are in a place of struggle and resistance where change is elusive.
Level 3: The person is treading water at this stage. They are working hard to stay afloat but not making significant progress in altering their overall situation.
Level 4: They're swimming toward shore, toward a more favorable environment where they can thrive. They're actively seeking change and adjustment to a post-adversity reality.
Level 5: At this point, they've managed to climb out of the water and change their circumstances. Their resilience allows them to overcome challenges and seek better surroundings.

Continuing with the metaphor, we all stand on the shores of life's ocean, waiting for the next wave to come crashing upon us. The wave is akin to life adversity, and the size of the wave is dependent on the severity of the adversity. Resilience only arises in response to adversity. Before adversity, it could not be demonstrated, though we can estimate how quickly it would disappear. People with a high level of childhood trauma (Adverse Childhood Experience scores of 6 or more start at a very different reserve level than people without childhood trauma.

We then generated prototypical stories to represent each of the levels. The three of us coded each interview using our prototypical examples to assign levels of resilience for all thirty-five interviews and to determine how close we were to agreement. During the interview process, in interaction with the interviewer, participants rated their overall health, levels of life stress, self-esteem, levels of depression, levels of unhappiness, levels of physical fitness, levels of social support, level of spiritual practice, presence and intensity of psychological treatment, severity of adverse events in each chapter of their lives, presence of illness. Figure 1

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presents a diagram of our resilience model, showing the factors, we are incorporating from the life story interview. The focus of this study is to show that we can achieve inter-observer reliability in our resilience assessment and to offer illustrative training cases that we used to obtain that result.
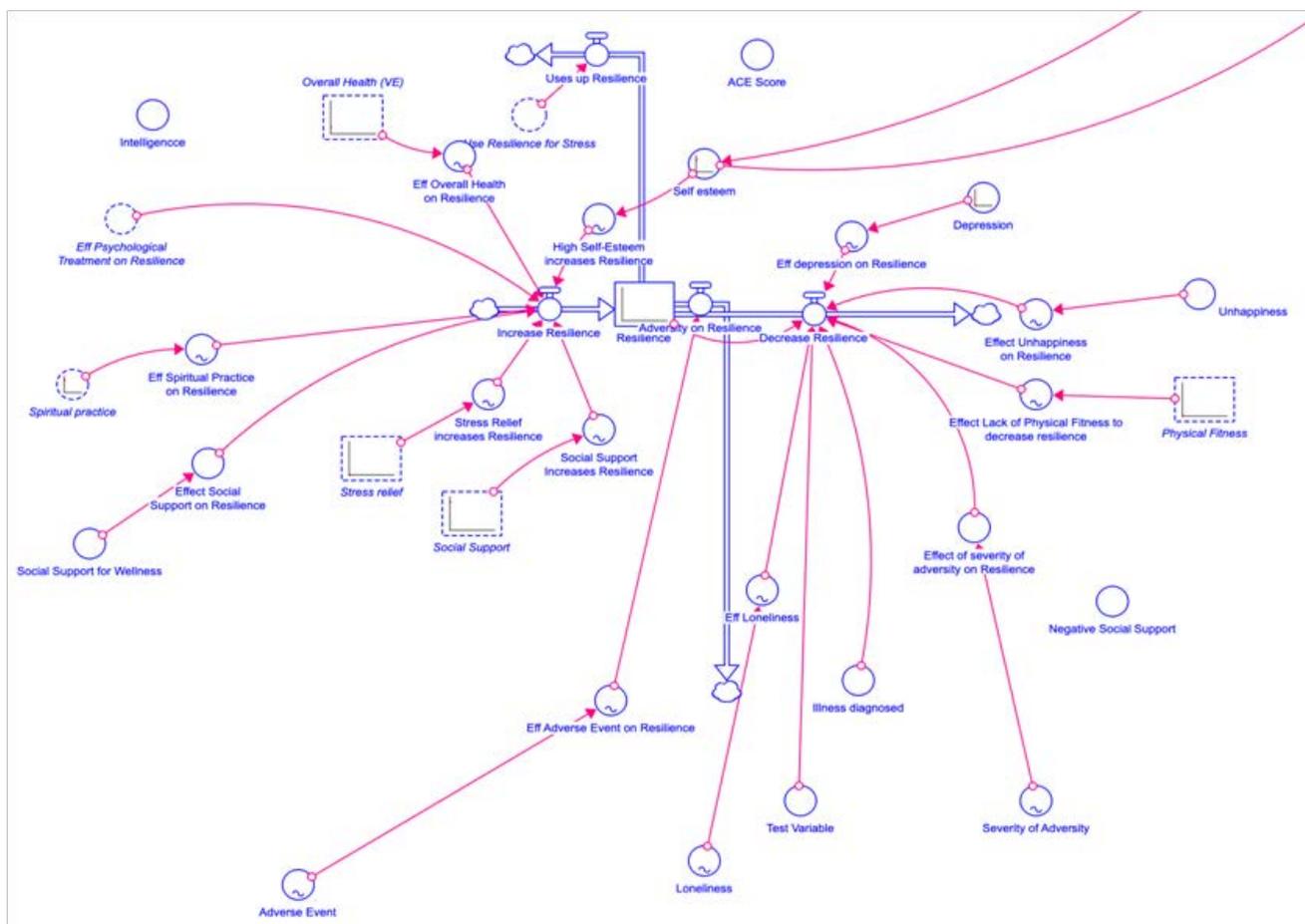

Figure 1: Diagram of a Model of Resilience

Abbreviations used include Eff = Effect, ACE = Adverse Childhood Events Score. We consider resilience as a reservoir that gets depleted by adversity. In this sense, resilience is an action potential that can quickly disappear, given the existence of adverse childhood events, poor physical conditioning, loneliness, and depression. Resilience is increased by positive social support, high self-esteem, stress relief, psychological treatments, spiritual practice, and high overall health. We are conceiving resilience as continually varying as adverse events occur and people recover or do not. Like Troy et al., we defined resilience as a relatively stable outcome rather than a short-term one.

3. Results

The following are prototypes of each pattern we identified from the life stories we gathered. Through our interviews, we observed that the individuals who fit into the pattern of "one" tended to have a high number of adverse childhood experiences, as shown through the ACE survey. Many external factors modify their resilience, including intelligence/education level, drug/alcohol use, positive role models, and exposures to nature/art/spirituality, steering a person down a set of patterned thinking and actions that ultimately depict their overall life story.

3.1. Story of Pattern 1: Swordfish or S

As a young child, S lived with a mother who suffered from mental health issues. By age 9, two crucial life adversities occurred: she learned that her father was not her biological father, and she was placed into foster care. With an ACE score of 6, her adverse childhood events included prolonged neglect, physical and emotional abuse, sexual abuse by her father, as well as exposure to substance abuse and domestic violence. S possessed high innate intelligence, leading to her excelling academically with a 3.9 GPA and playing the clarinet while in school. Meanwhile, socially, she struggled, often getting into fights. She started drinking alcohol during school hours, leading to multiple suspensions. S successfully entered university and was recognized for doing so. She completed 3.5 years of schooling, working towards a business management degree. However, she continuously used alcohol throughout these years. S had the skills and intelligence to rise to managerial positions at various jobs. After several years of managing six different laundromats and working as the assistant manager at Payless, she was offered the opportunity to own her store. She could not accept this role because of childcare issues that arose at home between her and her husband.

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S was able to quit using alcohol when pregnant with her first child. During this time, she needed to work a lot, overseeing several laundromats and stores, so her first husband took care of their child. She would often return home to find him having drunk excessively, and he was frequently abusive to her. One specific time, she came home from work and witnessed him incapacitated from alcohol with their baby soiled and neglected. She felt a strong desire for a divorce during this time. She subsequently had an affair, which he discovered and used as blackmail to gain custody of their child, clearing out her bank account and leading to her first experience of homelessness. She quickly returned to the pattern of drinking alcohol and began using cocaine while homeless.

Eventually, after a finalized divorce several years later, she met another man and became pregnant. She is again able to quit drugs and alcohol. However, she miscarried, which led to a binge of alcohol; she remembers drinking an entire bottle of vodka that night. This man violently assaulted her, which led her to leave him and become homeless. She started to sell drugs for money during this time. Additionally, around this time of her life, her daughter was taken from her custody and sent to live with a cousin, and this loss led her to return to the use of drugs and alcohol. The most recent stressor in her life was the death of her brother from a gunshot fired by the police, which was deemed a "suicide by cop." She did not leave her home for six months in the aftermath of the loss of her brother, especially after finding a YouTube video showing the events of his death. S is currently homeless and unable to work physically, secondary to a car accident several years ago that left her debilitated with several screws in her spine. She did not regain custody of her children.

3.2. Analysis of Pattern 1: Swordfish

The essence of pattern 1 is to sink to the bottom of the pool despite having advantages. These advantages (her intelligence, for example) are offset by her high ACE scores and her high levels of physical, emotional, and sexual abuse, coupled with witnessing substance abuse and domestic violence and entering into the foster care system. Despite her intelligence and talents, S continued to connect with abusive men and fell into drinking and using drugs, becoming homeless and losing custody of her children.

S lacked adequate positive role models in her immediate family unit or beyond. The presence of an abusive father early in her life may have contributed to her limited perspective and poor judgment in finding a healthy, supportive relationship of her own. She found men who were also physically and emotionally abusive. She consciously acknowledged her desire for a "good man," with hopes of steering away from making the same mistakes her mother made, but ultimately ended up involved in abusive relationships. The trauma she experienced often led to continuing the intergenerational cycle of abuse, as demonstrated by her first husband being alcoholic and abusive.

S entered foster care at age nine, a time when abstraction and perspective thinking to analyze the environment were emerging. She felt disregarded and left behind. At such a young age, without any external positive factors or therapeutic interventions to mitigate those feelings, the potential arises that this frame of mind becomes incorporated into her core understanding and representation of identity. We surmise that her strong intellectual ability contributed to her successful completion of high school and some college and reaching managerial positions in many jobs. This positive aspect of her life story is unfortunately hindered from successful iterations due to her relationships and alcohol abuse. Alcohol was a recurrent, destructive habit she entered when life presented challenges.

S was able to quit using alcohol when pregnant with her first child. This only temporarily broke her free from the depths to tread water. Without additional factors and the ability to swim, she ran out of stamina and sank, becoming homeless, returning to alcohol use, and beginning to use cocaine, losing her children ultimately.

3.3. Prototype Level 1, Badger or B

B experienced neglect, emotional, and physical abuse during childhood. He was the middle child with an older and younger sister. He described a traumatic memory around age 4 when his mother had an accident with a fire while burning trash. He saw her propelled backward after an explosion, leading to hospitalization. After the incident, his father told him his mother died and moved him to another state. His mother spent four years searching for him after her discharge from the hospital, and one day, when B was 8 years old, his mother came to his school and abducted him. He remembers being utterly shocked at his mother's presence as he had thought she was dead. For the next several years, he was caught in a custody battle. Living with his mother, he remembered struggling to deal with one of her boyfriends, and eventually, he lost all contact with his father. In adolescence, he began participating in burglary and car theft. He remembers being the puppy to older kids, following them in everything they did. After completing high school, he moved out of state and lived in a homeless shelter for a few years. There, he worked odd jobs but was simultaneously committing crimes that led to his being in and out of jail. He used several drugs and abused alcohol for years, leading to a series of rehab visits that ultimately ended in relapse. After four years in prison, he spent two years sober and worked at a steady job. However, after those two years, he returned to committing crimes and using drugs. He was on probation, on trial for multiple offenses that could result in 10 years of prison. While on probation, he was able to live in a recovery home as opposed to jail; however, he violated his probation and went on the run.

3.4. Analysis of B

Bs emotional and physical abuse and lack of positive role models limited his resilience. He experienced the significant trauma of witnessing his mother's severe injury and then believing for years that she had died. The emotional toll of her appearing on a random day years later and taking

him was overwhelming. He lived the rest of his childhood stuck in a custody battle between his parents, and once he entered adolescence, the misconduct increased with acts of burglary and stealing cars. He had not yet had any positive role models, so the kids around him were his role models to mirror and fit in socially at that time. With these role models, he placed himself in an environment of crime and drugs, leading to his incarceration. After several years of this way of life, he attempted to enter rehab and work a stable job, pointing to his reserve of resilience and efforts to better his life. However, it was short-lasting, and he ended up in the same pattern of behavior – continued relapse and return to jail. Currently, he's wanted for probation violation and is looking at 10 years in prison.

3.5. Story of Pattern 2: Swan, or S

We begin with an ACE score of 3. Swan grew up lower class with scarce food and clothing and a feeling of vulnerability in her home with two alcoholic parents. She had four siblings, all of whom were half-siblings: two brothers and two sisters. She began running away from home at the age of five. During middle school, Swan remembered being bullied and struggling in school socially due to her poverty and lack of clothes to wear, stating she had only one skirt for school. She reported doing well academically; however, by the seventh grade, she began skipping school and running away from home more frequently. She reported enjoying this time, "having a hell of a time running away and hanging out," but soon, she was caught and sent to foster care. She was sent to various homes, having to switch from home to home because she got into trouble in each of them. During this time, she reported feeling "better off" regarding material possessions and access to food/clothing compared to her earlier years. She stated that she couldn't help but compare her life in her biological home to this new situation, and the fact that her having more abundance of things made her feel uneasy that her family did not have what she had. She eventually ran away from her foster home at age 16 and, for the next few years, moved, staying with friends and her sister. Through the ages of 20-23, she gave birth to three children by two different men and moved back to Maine to be near her mother and sister. Upon her return, she lived with a close friend, worked two jobs, and tried to make ends meet. Unfortunately, this meant she was not home to care for her children, for whom her sister mostly cared. Ultimately, the state removed her children from her care for about one year. During this time, she worked and saved up her money. By age 24, after losing her children and most of her possessions, she decided to start counseling and began taking medication. After one year, she regained custody of her children, and the kids stayed in her mother's apartment. She also received some help from a friend who gave her some furniture. She was unemployed then but attended classes working towards a liberal arts degree. She met a new man during this time, and he had a car which he let her use to attend her classes. She gave birth to a child with him. His job took them to Texas, and as a family, they lived on the beach, which she remembers was a joyous time for the kids, but shortly after that, he became abusive. Swan decided to leave him and took the kids to a shelter. He found

them, and unfortunately, they returned to his care, and the abuse continued. She then reconnected with a friend who had previously helped her, and she moved to Cape Cod with the children and away from him. There, she remained impoverished and had difficulty caring for her children. She eventually repeated the cycle of connecting with men who became abusive, and friends helped her escape to Maine, where she lived with her mother, continuing to struggle financially.

3.6. Analysis of Pattern 2: Swan

Differentiating a pattern "one" from the ranking of "two," we see the person fighting to swim to the surface and attempting to stay afloat. Following our swimming analogy, this person still sinks occasionally, especially when their struggles become too much to tread water. Our example of pattern 2 has an ACE score that is less than our participants in category 1. Though the ACE survey captures the severity of a child's environment well through its ten questions, its limitation is that it is not all-inclusive of potential adversity during childhood. It can be inferred that she experienced substantial adversity due to her foster care situation. She began running away from home at the age of five, hoping to escape the pain and suffering of that environment. She reported doing well academically; however, by the seventh grade, without structure at home and proper nurturing, she began skipping school and running away from home more frequently. There are several ways to interpret her choice of running away; one hypothesis is that internally, she was driven to change her environment, thereby changing her life. Her sense of hope for a different way of living contributed to characteristics of psychological resilience. However, at such a young age, without any structure or resources to make the necessary changes, she was treading water as best she could while chained to the floor. One differentiating factor between this individual moving towards the pattern of a "two" is the sustainability of her protective factor, which was her children. Despite not having role models, proper guidance, or structure, she made substantial efforts to raise her children and provide a different path for them. When her children were removed from her custody, rather than sinking through unsuccessful coping strategies, she conveyed resilience by working and saving money to afford a place for her children to return to her care. Unfortunately, she too often entangled herself with abusive men, which contributed to her life adversity and pulled her down from the surface, preventing her from swimming to a better environment. She was stuck in a place of struggle and resistance, where change was elusive. She experienced another positive factor of social support as she maintained trustworthy and compassionate friends who helped her move away from her abusive husband to Cape Cod. These social connections acted as a buoy or life raft to rescue her. She remained socioeconomically poor and unable to enact lasting change within her environment, placing her in a "two pattern."

3.7. Story of Pattern 3: Alligator, or A

A begins with an ACE score of 5. A was raised by emotionally neglectful parents, especially her mother, who did not

hesitate to hide her disdain for A. Her mother was 18 years old, and her father was 19 years old when A was born. She had a younger brother by an age gap of three years, with whom she loved and got along very well. A remembers she and her brother being locked inside their room upstairs while her parents would have parties downstairs. For some reason, their mother showed greater affection towards the son; however, one fateful night, she left the house for good, leaving behind her two children and husband. Shortly after, the father met another woman with a few children, and they moved in. The first of several traumatic events for A occurred when she was twelve years old. Her stepsister, who was 21 years old, asked A to awaken her the following day. When she attempted, she found her stepsister dead, having committed suicide by pills. Within the following year, at age 13, she left her house, taking along her younger brother in search of a better life. A was able to take care of her brother for two years in a one-bedroom apartment while attending school and working part-time. In time, their mother convinced her brother to live with her, which he did. Academically, A achieved entrance into the #1 ranked high school in Maine; however, she struggled with attendance due to financial issues. She scored 1450 on her SATs and graduated third in her class. At age 16, she tried LSD, which she described as an incredible experience with feelings of peace and acceptance for the first time in her life. After graduating high school, she moved to California with a friend. They lived with his father, who was addicted to meth, which they discovered shortly after arriving. She remembers not having running water in that home, and after almost three years, she returned home to Maine. Upon her return to Maine, she started bartending and abusing drugs. She was 21 years old and began using oxycontin and cocaine. This would continue for several years; she reported gaining over 60 pounds in one year. Through the association of a boyfriend, she began her involvement with drug trafficking for money, which ultimately led to her arrest. After serving her sentence and with the help of the court system, she was able to start up her own cleaning business, with which she has been successful.

3.8. Analysis of Pattern 3: Alligator

This person's life story fits a prototype of pattern 3 in that she had moderate adversity with an ACE score of 5, and her life shows clear evidence of perseverance to "keep swimming." She showed success in treading water during her life, working extremely hard to stay afloat despite numerous adversities that could have sunk her to the bottom if she did not possess some characteristics of resilient behaviors. However, several aspects of her life choices and circumstances hinder her from attaining lasting change in her environment. After graduating high school, she spontaneously moved to California with a friend. The significance of her picking up and moving with this person is illuminated by the fact that she later admits that was the beginning of the template of terrible men in her life. As seen in our example of a prototype of the two, this person also has vital intelligence, contributing heavily to fostering resilience. However, it can be offset by other patterns of behaviors and, in this case, drug use,

limiting her resilience picture overall. She also turned to drug trafficking as an end, which ultimately led to her arrest. With her high intelligence, responsibility to care for her brother, and her will to survive, she was able to tread water for years, maintaining a job despite struggling with addiction. This shows her ability to attempt to reach new territory in her environment, pushing against the tide; however, the turbulence of her environment, past trauma, and lack of foundational structure together exerted a force more powerful, keeping her from swimming out of her environment.

3.9. Pattern 4 Story: Coatimundi

C begins with an ACE score of 9. An extraordinarily dysfunctional family unit raised C. Her father was physically and emotionally abusive, and her mother was emotionally neglectful. C had an older brother whom their mother overtly favored over C. C's paternal grandfather joined them in the home after his release from jail for sexual abuse of a minor. Around age 3, she experienced a devastatingly traumatic event during which her grandfather held her upside down in a position to sexually abuse her. During his ejaculation, she aspirated and choked, leading her to vomit and turn blue. He believed she was dead, so he rolled her inside an old rug and placed her in the garage under several large appliances to hold her down. When her father returned home and learned what had occurred, he saved her and brought her to the clinic. She was then sent to her paternal grandmother's house on a country farm. She would learn as she was older how her grandmother physically abused her father when he was young. Additionally, her grandmother divorced her grandfather after finding out that he was sexually abusing their daughters. C was sent back to live with her family after they moved into a new home, and the physical and sexual abuse continued. She remembers around age 5, he would give her medicine to help her sleep to "take a nap," but she had just woken up only a few hours prior. She remembers a specific incident after being fed up with being soiled and uncomfortable after the abuse, when she ran away from her grandfather, yelling at her father, hoping he would help her. Still, instead, he kicked her in the stomach, sending her tumbling down the stairs. Her father frequently beat her and her brother with his belt, causing bruising and cuts on her body, which aroused him and her grandfather, and she remembers times when she was forced to lie naked while they had intercourse in front of her. Another horrific incident occurred after the school sent home several notices regarding concerns over C's low weight without any response from the family. The principal and nurse came to their home one afternoon, which enraged her father. After ordering them from his home, he grabbed C and slammed her into the wall, hitting her in the jaw several times, breaking both sides of it, and throwing her into their stone fireplace, kicking her several times. She remembers going in and out of consciousness, seeing a lot of blood on the floor, and wondering why her mother and grandfather wouldn't stop him. Eventually, he left, and her grandfather brought her upstairs and locked the door. She remembers hearing her mother scream through the door that the only way it would work was to throw her over the

cliff in the ocean to hide her body. However, her grandfather refused and wanted to get a doctor. On arrival, the doctor surveyed her injuries, knowing instantly she needed to be brought to the hospital. Hence, he took her to his station wagon but had difficulty holding her while simultaneously trying to take the seat down, and her grandfather offered to hold her so he could move the seat; reluctantly, the doctor handed C back to her grandfather, who then rushed her back indoors and locked the doors. She admitted to thoughts of suicide during most of her childhood; her desire to cease existing was powerful; however, she couldn't leave her brother alone in the home as she was his protector. Then, one day, their neighbor drove C, her brother, and her mother to her grandmother's house, and on arrival, her grandmother called her father and threatened his life if he came to get them. A few years later, her grandfather, who worked nearby, asked to meet downtown to have a bite to eat, to which she agreed, but when she arrived, her father was there instead, so she frantically rode away on her bike, hoping not to be followed as she was so frightened to have seen him. Around age 11-12, they were living in poverty, and her mother forced her to go dumpster diving for food for the family. Her mother worked as a seamstress but was not firm in collecting payments for her work. C was humiliated during this time; she remembers wearing poorly made dresses made from the scraps of fabric from her mother's clients. Her underwear was always tattered, and when she started to have her menstrual period, she had to use socks to catch the bleeding. C had several mentors. In 8th grade, she had an algebra teacher who introduced her to rock climbing, which became a massive part of her life. Her biology teacher invited her to help on a glacier retreat project, which gave her purpose. She also had an English teacher who encouraged her to read, and she picked Paradise Lost. They spent time discussing the book, which was helpful and enlightening. While struggling financially but yearning to climb, in desperation, she at times arranged a deal with her grandfather that for a small fee of $1-2, she would allow him to masturbate in front of her so that she could have the money to continue to climb. By this time, she had threatened him that she would tell her grandmother of his abuse, so he had stopped sexually abusing her but would often sneakily masturbate around her. She missed a lot of school due to several chronic bouts of pneumonia, and one day when she arrived home, her brother was there. He attempted to rape her, but she was able to shove him off and run away. This ended their previously trusting relationship. She continued climbing in high school, joined the debate team, and did well overall.

Upon starting university, she began taking peyote, which was legal then, to explore the spiritual realm. She and her friends decided to move to San Francisco, where they packed into a small apartment that happened to be next to a psychedelic shop, and they ultimately began using a lot of LSD. During her early twenties, she started seeing more monsters, which made her day-to-day life quite challenging; she remembers being unable to ride her bike without feeling like monsters were attacking her. She did not attribute it fully to the drugs but was able to admit that it likely

contributed to her worsening mental status. She was sent to an inpatient psychiatric facility secondary to her behaviors and emotional outbursts. Her Japanese teacher allowed her to make up the credits she missed to graduate. She continued to see the same psychiatrist who was extremely controlling of her, and she noticed his manipulative and controlling nature. She started taking perphenazine, which she remembers quieted things down in her head and worked well. She remembers him abruptly ending their meetings, which filled her with anger, and she had the urge to punch his office window, but she chose to control her rage as she knew she would get in trouble and probably end up in jail, and she did not want to give him that satisfaction. After leaving town, she went to Seattle and was accepted into Japanese studies for graduate school. However, to pay for tuition, she needed money, so she was hired at a library, where she continued to work before eventually getting a job driving a city bus. She met her female partner within that timeframe, and they wanted to have children together. She did not want to bear the children because she was afraid of passing her mental struggles to the kids, so her partner had the two children. She spent weekends during their childhood taking them skiing and swimming. She described her partner as deceptive and untrusting. They fell out of love quickly after having the two children, and her partner started up a relationship with her brother and had an additional child with him. Her brother and ex-partner both became alcoholics, and he became an abuser, like his father. C was often mad that she had no rights for the children because she had a good job with benefits, but she couldn't use them for the kids. Her daughter grew up to be a lactation consultant, married with four kids, and her son is a lawyer married to a lawyer with one child. Several years later, she met her current husband, a Japanese American, whom she describes as gentle and kind. He was challenged in many ways because he had dyslexia, limited education, slept excessively, and refused to work. As they aged and retired on social security, she accepted him more as their situation morphed. She continued to struggle with mental health issues during this entire period of her adult life. As she got older, she was at a doctor's appointment and had a consult with the psychiatry department, where she met her current therapist, who has given her strong support.

3.10. Analysis of Pattern 4: Coatimundi

CE is our example of pattern 4; we see that despite her severe adverse events in childhood, including a father who was physically abusive, a sexually abusive grandfather, and an emotionally neglectful mother, she was able to swim to new environments. One of her main protective factors, despite the ongoing abuse's effect on suicidality and depression, was her older brother. She felt a sincere responsibility to care for him and not abandon him in their turbulent water. This effect cannot be diminished as it served as her sense of will to live through finding meaning in her suffering for his sake. Additionally, she experienced several kind neighbors who would make her feel unique and seen. Even minor acts of positive attention allowed her to expand her limited perspective and see beauty and peace around her, especially when the neighbor one day gracefully took her

brother, mother, and she away to her grandmother's house, permanently taking her out of the care of her horrific father. After the severe beating she received from her father, she recalled the disembodied feeling from her physical flesh and being in a state where the time-space continuum didn't exist. She remembered feeling like she could escape to that realm whenever she didn't want to experience the pain and suffering that filled her physical environment. During her recovery, her left side was fragile, and yet she was able to slide herself to the bathroom, forcing herself to lean against the wall and take one step at a time. She articulated that her will to fight and continue pushing forward was partly due to her profound philosophical realization that she was alone, literally alone in the home and psychologically alone without help, and she realized she only had herself on whom to rely. This inner fortitude helped her to take one step at a time. While climbing, she felt life open; she could leave all the tragedy below and breathe. The climbing experience gave her a sense of oneness with nature and freedom. During these climbing adventures, she remembers meeting many interesting people of all professions, including lawyers, doctors, professors, scientists, botanists, bloggers, and foresters, listening to all their perspectives and journeys and realizing life's potential. This eye-opening realization was tremendously healing for her. Notably, after the attempted rape by her brother, who was previously the reason she did not act on her suicidal thoughts, she felt climbing lit a fire inside her giving her a purpose to live for her next exhilarating adventure. This is an example of her being able to keep swimming despite the adversity. Several outstanding teachers served as mentors, showing her kindness, purpose, and hope; collectively, all helped her stay afloat during late adolescence and graduate school. She recalled always doing better when she felt she had a purpose and connections. In her early childhood, she had no connections or healthy relationships to give her a sense of meaning and purpose. She also reflected on the small, quick moments when people outside her immediate family showed her kindness and graciousness. She realized that all those moments were significant and, she believed, contributed to changing the trajectory of her life. An additional piece of her story that is important in showing her resilience through showing her strong inner self-control and integrity is the effect her grandfather had on her and her brother in terms of sexuality. As young children, their grandfather would lure them into Storytime, which sometimes involved ordinary stories but often would include stories about whipping and beating children. He would abandon them in the bathroom during these stories, making strange noises. C felt the "ugliness" creep into her own sexual desires, leaving her feeling impure. She vowed to herself that she would never hurt anyone, and she was proud to have not broken that promise, especially after witnessing her brother turn into a man similar to their father and grandfather, physically and sexually abusive.

3.11. Pattern 5 Story: Dog

Dog grew up in a poor, small apartment as the second oldest child of seven. Her father was a raging alcoholic who frequently abused her mother as well as her. She remembers hitting her head against a wood pillar in her home in hopes of cracking it open and dying because her life was so insufferable. Her mother was emotionally distant; she worked weekends and attended evening college classes. Her father was an alcoholic, but his severity of use worsened after a boating accident when she was seven years old. They were near a beach when the accident occurred, and she and her older brother were sent to shore to get help as the boat was sinking, and a man on the beach who came to rescue them tragically drowned. She also remembers a time when her father came home highly drunk and opened an empty pizza box, and after finding out that the dog ate the last piece, he beat her. She began working several jobs during high school, saw how her friends' households functioned, and realized that other potential ways of living existed. She started therapy around age 20 to prevent herself from "repeating history." She graduated with a teaching degree, but after having difficulty finding a teaching job, she worked as a nursing technician, leading her to attend nursing school. She worked hard to continue pursuing her education and earned her Master of Education. She decided to live with an aunt while attending nursing school to focus and avoid distractions. Instead of renting, she helped her aunt remodel and fix her home. She remembers making a promise to herself that when finding a partner, they would need to fit three specific criteria for marriage: No alcohol, no physical abuse, and being a hard worker. She was married by age 30, and the first signs of trouble arose after he did not allow her access to her bank accounts. She was a hard worker and gave him all her money after she bought groceries for the house. She remembers a bank teller constantly advising and reminding her to put her name on the accounts, but she thought that since they were married, it was not a big deal, and legally, she was entitled to her share. Their son was born a few years later, and that is when she noticed more concerning changes in her husband's behaviors. She stopped working to care for her son, and he completely prevented her from receiving any money. Dog remembers calling her husband's mother for emotional support and perhaps explaining why his personality and behaviors may have changed. After presenting her concerns, his mother said, "Make sure there's a warm meal on the table, the house is clean, and everything's going to be okay." That is when she knew what she was facing and that she was alone. She decided that she would not have any more children with him as she did not want to trap herself with more kids, as she remembered that is what happened to her mother after having seven children. She continued with therapy and remembered participating in role-playing group therapy, which was healing. This therapy helped her experience alternative perspectives of those around her through role play. She also started attending sweat lodges, which provided additional healing and spiritual experiences. She waited until her son graduated from high school to file for divorce, which ultimately took about five years to be finalized because her ex-husband fired each of the lawyers when they said they must split the assets, which he did not want to do. She eventually remarried, and her new husband was exceptionally kind, gentle, and loving, qualities she had not promised initially to herself when younger. Her

relationship with her son faced some tumultuous times, which she felt was influenced by her ex-husband, and they remain somewhat distant from each other emotionally. She noted that over the years, reflecting, she could see a positive effect that her ex-husband had on her. She remembers how organized she was in consolidating the construction plans, estimates, and blueprints from when he built their house, and she watched, listened, and learned from him.

3.12. Analysis of Pattern 5: Dog

This life story represents a prototypical five, as Dog made conscious decisions with sustained efforts to change her environment. She was placed into treacherous waters, but she had the grit and resilience to overcome the currents and swim to new waters. Her life was not a straightforward, easy path to these new waters, but we see her resilience as she persevered through each step in her life in hopes of changing her situation. With an ACE score of 5, she suffered emotional pain and abuse, which, as seen in other research participants' life stories, would be enough to sink anyone. She grew up with an abusive alcoholic father who abused both her mother and her. Her mother was emotionally distant from Dog, working weekends and attending evening college classes. Witnessing her mother's behavior and choices contributed to her path through life. Serving negatively in terms of a nurturing mother-daughter relationship but also positively in that Dog witnessed the actions necessary to "get out"; that education and work could free her from the oppressive entrapment of her father's home. Additionally, in high school, when visiting friends' homes, she observed much less dysfunctional families, opening her perspective and leading her to commit to working hard and studying to better her life. This exemplified Dog's will and courage to swim away from the waters she was placed in. Another positive factor was her connection and joy for nature and spirituality. These gave her a sense of uniqueness and distinction from her family unit, which also contributed to the building blocks of her foundation, allowing her to change her environment and way of life. She recalled a time in high school when her father yelled at her about why she was wasting her time trying to get into college and that she would never make anything of herself. Her enthusiasm for change, independence, and freedom from him allowed her to respond, "What do you think I'm going to be like you?" Her burning desire for change and a better life fueled her determination to work and study hard. In her early twenties, we see her begin therapy in conscious efforts to "not repeat history." This is a clear example of her reluctance to accept the environment into which she was placed and her resourcefulness to "call for help" through structured therapy. With the template of her father as the male figure in her life, her intentions for marriage were to find a man that fit three specific criteria: no alcohol, no physical abuse, and a hard worker. This mindset illuminates the complexity of the effects of one's environment and experiences on one's thoughts and behaviors, in this case, limiting her from finding a man possessing any other qualities that make up a sustainable relationship. Her husband was controlling with the finances and was not loving towards Dog. She chose not to have a second child with her husband; she

saw the suffering she would face if she stayed, showing her maturation and the gained perspective of how similarly her mother began having children at a young age despite wanting a divorce. This example illuminates her will to swim away and not remain stuck in repeating history.

During the early years of her son's life, her desire for divorce was unchanged; however, due to the complexities of their relationship, including his controlling nature, she felt compelled to stay married until her son was older, at which time she filed for divorce, setting herself free and opening the opportunity to begin a new relationship now with a different perspective.

3.13. Story of Pattern 5: Bear

Bear had to adjust to a new environment early in life after his family moved when he was age 7. He stated the move caused him to experience a new culture; he said, "In New York City, there were kissing and spin the bottle parties; in Westchester, boys and girls were on separate sides of the room at parties. I was learning that there are different customs for different locations." Bear stated that at age 12, the ignorance of childhood ended when his appendectomy went wrong. After having complications, he overcame this adversity by growing closer to nature from this experience. He noticed at a young age that "there is nature's way, the natural way." Most of his family consisted of builders and lawyers, so naturally, he became a lawyer and engineer with the ambition of "wanting to be the world's best." He constantly strove to improve himself and his situation. He excelled at work while attending school, culminating in a business career that brought him millions in revenue. Bear could thrive in this environment, and he developed different motivations. He stated, "I started to go to classes run by a guy who explained that the world had enough resources; the problem was the distribution of the resources." Bear developed the conviction that business was destroying the planet, so he decided to become an ecological business developer, stating that his motivation was to make the world a better place and leave it better than he found it. Bear showed ambition by wanting to swim, changing his environment, and helping other people have better environments to swim in. These are some of the qualities that help make Bear a 5. Bear met his first wife at work, and his parents said that if they got married, they would buy them a rent-controlled apartment. Bear described the event as a quid pro quo, and he said that his marriage was agreed to be open. The open marriage ended after his wife fell in love with another man who was Bear's friend. He stated, "It was supposed to be an open and honest relationship, but Betsy and the other guy kept it a secret. So, I felt betrayed by my friend and my wife." Bear withstood another large wave (betrayal by a loved one). The final straw for Bear was when his wife stated, "Bear was an arm, but the other guy was the other arm, and how can she be expected to cut off one of her arms?" After the relationship ended, bear craved a deeper, more intimate relationship, and eventually, he met his second wife at a spiritual retreat in Costa Rica. He stated they fell madly in love and had good times, but she had children from a previous marriage. The children moved in. Their biological father emotionally hurt them,

and Bear states their relationship suffered over this. He said that his wife was drinking too much and not interested in getting therapy. Bear described how his first marriage was finalized in a divorce, but instead of settling outside court, he regretfully went to court and "lost everything asset-wise." His current wife became upset at the sudden change in their living conditions when they lost most of their money. Despite Bear's returning to real estate, she did not forgive him, and the relationship ended. Bear recovered his fortune but was then betrayed by a business partner. At the age of 70, he lost everything and was on the streets, homeless and asking for money. However, he continued to demonstrate resilience. He turned to spirituality, found "the love of his life," and felt better than ever. A friend said, "After he lost everything, Bear seemed more present; a lot more of him was present. » Bear continued to seek change and went to a therapist who asked him, "What does Bear want?" This question opened his mind to the idea that most of his life, he was doing things to please others, doing things for everyone else, and now his perspective had changed, and he was looking for things his soul wanted, not just what others wanted."

3.14. Analysis of Pattern 5: Bear

Bear's story shows a strong sense of spirituality from an early age. He has a spiritual vision at the age of 7, in which he is told that everything in his life will be okay, and at the age of 15, he has complications from an appendectomy, but instead of this bringing him down, he can grow closer to nature during this time. Bear was a successful businessman constantly striving to improve himself by going to school and was part of a construction company that went public; however, for various reasons, the company went bankrupt, and he had to sell some of his assets. Through this trying time, we continue to see him persevere and swim against the latest adversity of his life. He finds another business partner, and through this company, they generate millions of dollars in revenue per year. While he is once again a successful businessman, he takes a class where an idea was planted in him that the world has enough resources, but the distribution of these resources is the problem. He decided his new motivation was not to make as much money as possible but to improve the world. This is another example of Bear striing to swim in a new environment and go to places he feels are best for him to continue growing. When looking at Bear's history of relationships, we again see his remarkable ability to want to change and adjust his perspective, showing an exceptional ability to swim to new circumstances when he finds himself in rocky waters. His first relationship was an open marriage, but after his wife betrayed him, he wanted to swim to new territory and find a relationship that had more profound meaning and purpose. Bear is still swimming into new territory after meeting a new partner in a meditation retreat. We continue to see how, despite the adversities that Bear experiences, he continues to swim to new shores, always striving to better himself and find a better environment in which to thrive.

3.15. Inter-Observer Reliability

For 35 participants with five ratings and three raters, we had a percent overall agreement of 84.00% with a free-marginal kappa of 0.80 (95% CI for free-marginal kappa; 0.66 to 0.94). The fixed-marginal kappa was 0.78, with a 95% CI of 0.62 to 0.93. AI had a percent overall agreement of 71.33% with a free-marginal kappa of 0.65 (95% CI for free-marginal kappa was 0.50 to 0.79: fixed-marginal kappa of 0.61 (95% CI for fixed-marginal kappa of 0.51 to 0.71. Cohen suggested the Kappa result be interpreted as follows: values ≤ 0 as indicating no agreement and 0.01–0.20 as none to slight, 0.21–0.40 as fair, 0.41– 0.60 as moderate, 0.61–0.80 as substantial, and 0.81–1.00 as almost perfect agreement (Cohen, 1960). All results were statistically significant at p < 0.05.

4. Conclusions

Three raters can agree on resilience ratings, considering individual backgrounds, including ACE scores, the environment in which people find themselves, and their responses to adversity. Training cases are essential in generating that level of agreement. Using our water/swimming metaphor, we could reliably relate lifetime resilience using our training stories. Biases are implicit in that we consider returning to using substances, becoming homeless, being incarcerated, losing custody of children, and losing employment as mitigating against resilience. Resilience means managing adversity without returning to using substances, maintaining housing, avoiding incarceration, keeping custody of children, and maintaining employment. We found that resilience is much more difficult to define than we ever imagined because it is not just intrapersonal, but it relates a person to the environment. When we try to rate resilience, it is always in the context of an environment, a past, and a present. The individual-oriented scales can explain the lack of correlation between our resilience scale and our ratings. In contrast, our ratings attempted to integrate the environment with the person. We suspect that the field of resilience needs to move toward more holistic directions, integrating individuals with environmental factors.

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